

**Assessment and Lesson Resources**



**Inside you'll find:**

- Unit and Lesson Assessments
- Answer keys
- Activity sheets and Cards



 Amplify Desmos Math **FLORIDA**

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# Accelerated 6

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**Assessment and Lesson Resources**

## About Amplify

Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today’s students.

A pioneer in K–12 education since 2000, Amplify is leading the way in next-generation curriculum and assessment. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

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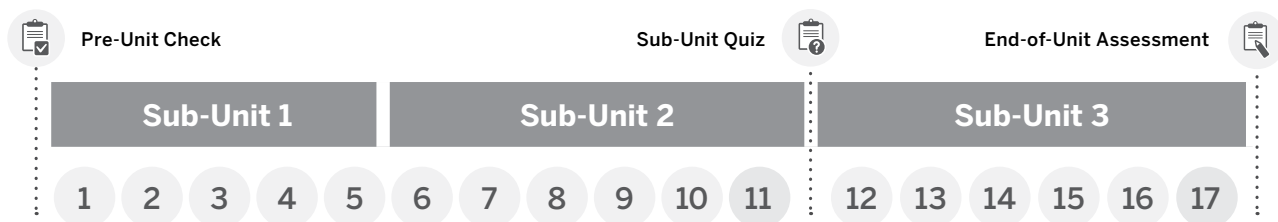
# Assessment Overview

Throughout the lessons, units, and course, you'll find summative and formative assessments that provide insights into students' conceptual understanding, procedural fluency, and application, as described in the grade-level standards.

## Course

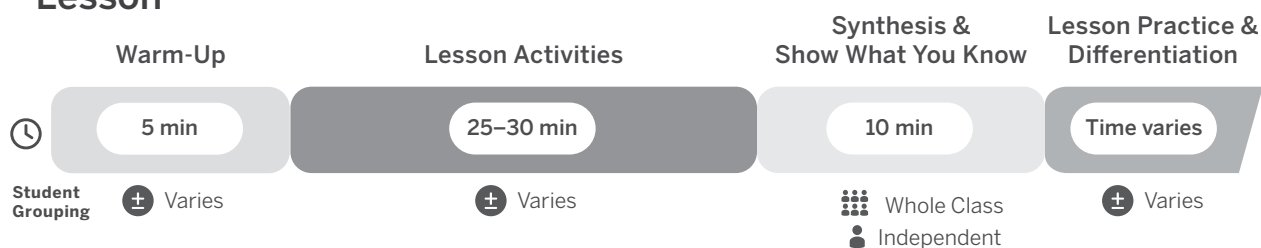


## Unit



**Note:** The number of sub-units, quizzes, and lessons within each unit varies. This depiction shows the general structure of a unit. See the course Table of Contents in the Teacher Edition for more details.

## Lesson



## Assessment Philosophy

- There are a variety of informal and formal assessment opportunities throughout a unit and course.
- Problems on assessments vary in form and depth of knowledge.
- Some problems mirror lesson problems, while others ask students to apply their knowledge to new situations.
- Students are often asked to explain their thinking or decide and defend an opinion.
- When possible, problems are designed so they can be approached from multiple angles and using different strategies.

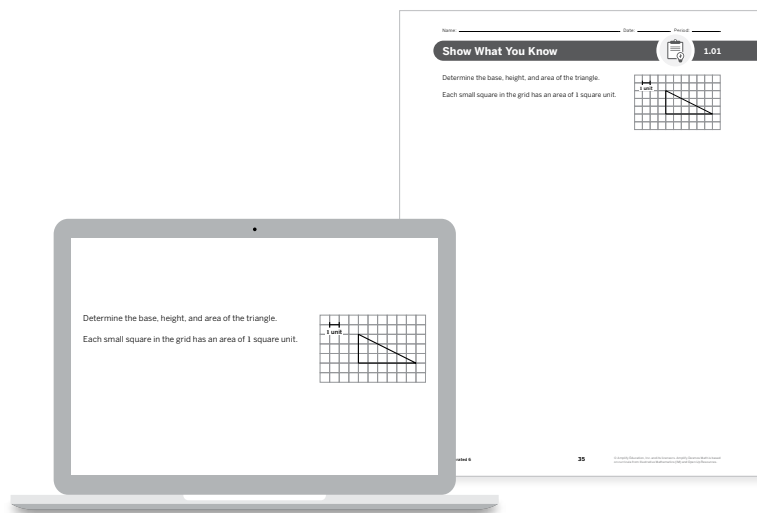
# End-of-Lesson Assessment

Every lesson ends with an opportunity to check in, as well as ideas about next steps based on students' level of understanding.

## Show What You Know

Each lesson has a daily formative assessment focused on key concepts in the lesson.

- Show What You Know moments are designed to minimize the time they take to complete while maximizing the insight they give teachers, so that teachers can better attend to student needs in the following class.



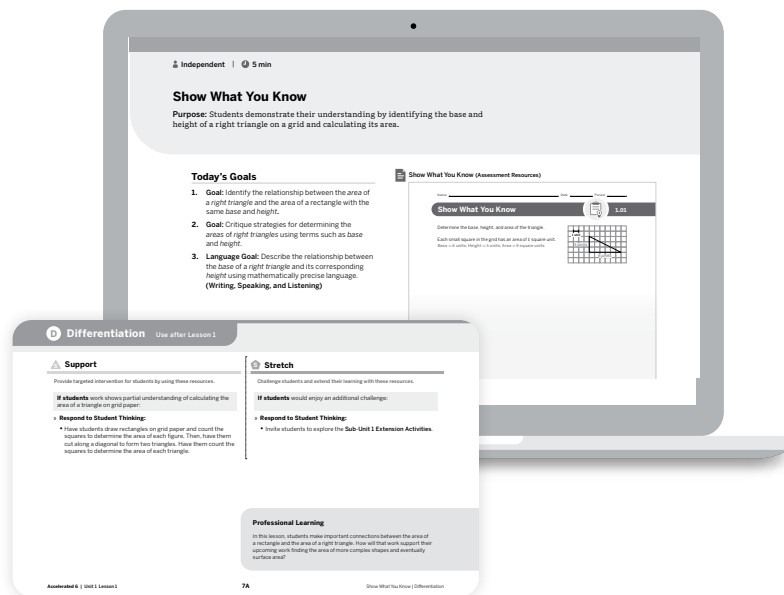
## Differentiation Beyond the Lesson

Every Show What You Know is accompanied by options for differentiation beyond the lesson that are based on students' work.

The differentiation table offers suggestions to **support**, **strengthen**, and **stretch** student learning. It's available in the Teacher Edition and on the digital lesson page.

These suggestions can include:

- Mini-Lessons
- Previous Lessons
- Specific Teacher Moves
- Lesson Practice
- DOK 3 Lesson Practice problems
- Extensions



# Unit-Level Assessments

Embedded unit assessments offer key insights into students' understanding of the grade-level standards in the unit.

## Types of Assessment

Each unit includes an optional Pre-Unit Check, one or more Sub-Unit Quizzes, and an End-of-Unit Assessment.



### Pre-Unit Check

Each unit begins with a check of students' understanding of the foundational concepts and skills that will support them in the upcoming unit. It can be assigned in its entirety before the unit or spread throughout the unit.



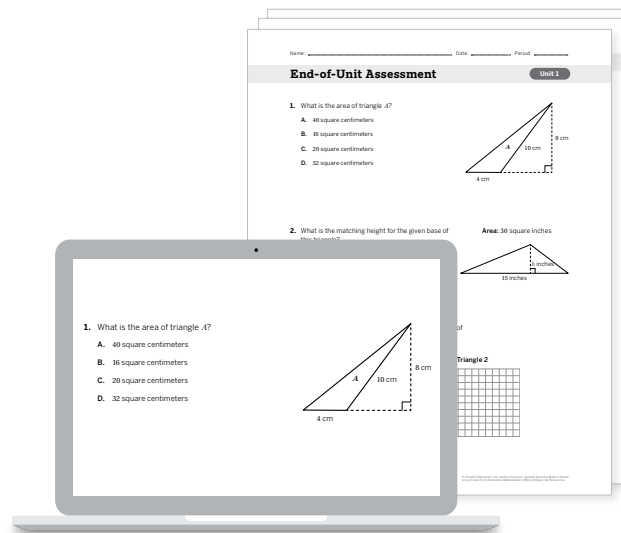
### Sub-Unit Quizzes

Each unit contains one or more sub-unit quizzes designed to assess students' understanding of the content up to that point in the unit.



### End-of-Unit Assessment

Each unit ends with an assessment of students' understanding of the content in that unit. There are two forms of each End-of-Unit Assessment: Form A and Form B.



All assessments are available digitally, in the Assessment and Lesson Resources book, as downloadable PDFs. Text to speech is available in the digital version.

## Assess and Respond Guides

Each assessment is accompanied by an Assess and Respond Guide in the Teacher Edition.

### Item Analysis

Look up the standard, depth of knowledge (DOK), and concept associated with each problem.

Item Analysis, Forms A and B				
Problem(s)	Concept or skill	Addressed in	DOK	FL B.E.S.T. Math Benchmarks
1	Using the structure of a diagram to determine the area of a triangle without a grid	Lesson 3	1	MA.6.GR.2.1
2	Determining the area of a triangle, given the length of a base, or a height when given the other two measurements	Lesson 3	1	MA.6.GR.2.1
3	Creating triangles with a given area	Lesson 2	2	MA.6.GR.2.1, MTR.5.1
4a	Calculating the area of a polygon composed of rectangles and triangles on a grid	Lesson 4	2	MA.6.GR.2.2, MTR.2.1, MTR.5.1
4b	Providing a different strategy to calculate the area of a polygon composed of rectangles and triangles on a grid	Lesson 4	3	MA.6.GR.2.2, MTR.2.1, MTR.5.1
5a	Critiquing the reasoning of another who inaccurately calculated the surface area of a rectangular prism.	Lesson 6	3	MA.6.GR.2.2, MTR.4.1
5b	Determining the surface area of a rectangular prism.	Lesson 6	2	MA.6.GR.2.4
6a	Using a net to identify the type of polyhedra	Lesson 7	1	MA.6.GR.2.4
6b	Calculating the surface area of polyhedra	Lesson 8	2	MA.6.GR.2.4
7a	Calculating the area of a polygon in context	Lesson 5	2	MA.6.GR.2.2
7b	Applying area techniques to solve problems in context	Lesson 5	2	MA.6.GR.2.2, MTR.7.1

### D Differentiation

Respond to student thinking through resources and teacher moves that **support**, **strengthen**, and **stretch** learning.

D Differentiation (End-of-Unit Assessment)		
Sub-Unit Goals	Problem(s)	To respond to student thinking, consider:
<b>Sub-Unit 1:</b> Calculate the area of composite figures by decomposing into rectangles and triangles or by surrounding and subtracting. (Lessons 1-5)	1, 2, 7	<b>Support</b> <ul style="list-style-type: none"> <li>Mini Lesson: Calculating Areas of Triangles</li> <li>Teacher Move: Consider Revisiting                             <ul style="list-style-type: none"> <li>Unit 1, Lesson 3 (Off the Grid)</li> <li>Unit 1, Lesson 4 (Letters)</li> <li>Unit 1, Lesson 5 (Drawing Down)</li> </ul> </li> </ul> <b>Strengthen</b> <ul style="list-style-type: none"> <li>Repeated Challenges: Lesson 3 (Off the Grid)</li> <li>Challenge Creator: Lesson 5 (Drawing Down)</li> </ul>
	3	<b>Support</b> <ul style="list-style-type: none"> <li>Teacher Move: Consider revisiting Unit 1, Lesson 2 (Exploring Triangles)</li> </ul> <b>Stretch</b> <ul style="list-style-type: none"> <li>Invite students to create a design on grid paper using triangles that each have the same area but are not all the same shape.</li> </ul>
	4	<b>Support</b> <ul style="list-style-type: none"> <li>Teacher Move: Consider revisiting Unit 1, Lesson 4 (Letters)</li> </ul> <b>Strengthen</b> <ul style="list-style-type: none"> <li>Invite students to create their own composite figure on a grid and calculate its area.</li> </ul>
	5	<b>Support</b> <ul style="list-style-type: none"> <li>Mini Lesson: Determining Surface Areas of Rectangular Prisms</li> <li>Teacher Move: Consider revisiting Unit 1, Lesson 6 (Peanut's Stickers)</li> </ul> <b>Stretch</b> <ul style="list-style-type: none"> <li>You're invited to explore more: Lesson 6 (Peanut's Stickers)</li> </ul>
<b>Sub-Unit 2:</b> Calculate the area of composite figures by decomposing into rectangles and triangles or by surrounding and subtracting. (Lessons 6-7)	6	<b>Support</b> <ul style="list-style-type: none"> <li>Teacher Move: Consider Revisiting                             <ul style="list-style-type: none"> <li>Unit 1, Lesson 7 (Pyramids and Prisms)</li> <li>Unit 1, Lesson 8 (Plotting But Not)</li> </ul> </li> </ul> <b>Strengthen</b>

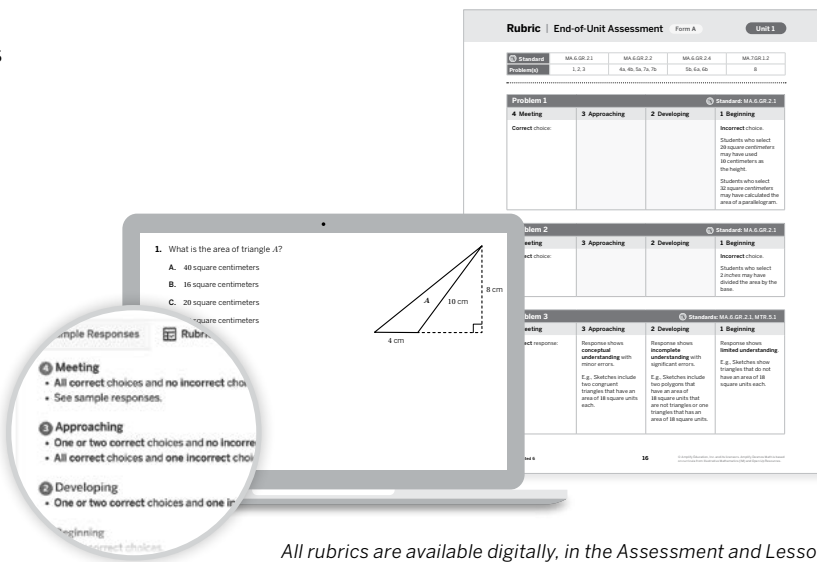
# Assessment Rubrics and Grading

Amplify Desmos Math Florida comes with tools that support you in giving students standards-based feedback in a variety of ways.

## Assessment Rubrics

In-depth rubrics help teachers anticipate and respond to students' learning needs.

- Every Sub-Unit Quiz and End-of-Unit Assessment includes an accompanying rubric.
- The purpose of the rubric is to support teachers in recognizing what students might understand, especially when their answers do not match the correct responses.
- Rubrics are aligned to the 4-point scale embedded in the assessment grading tool.



All rubrics are available digitally, in the Assessment and Lesson Resources book, as downloadable PDFs.

# Lesson Resources

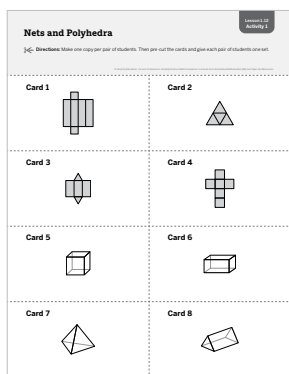
Some Amplify Desmos Math Florida lessons include Lesson Resources in addition to the Teacher and Student edition pages that help make learning more hands-on and collaborative.

## Types of Lesson Resources

Each grade includes a variety of Lesson Resources available to teachers and students.

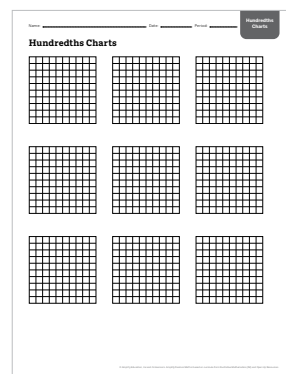
### Activity Sheets and Cards

Unit-, lesson-, and activity-specific sheets and cards are provided for hands-on and collaborative learning. Examples include card sorts or sheets with real world data.



### Optional Sheets

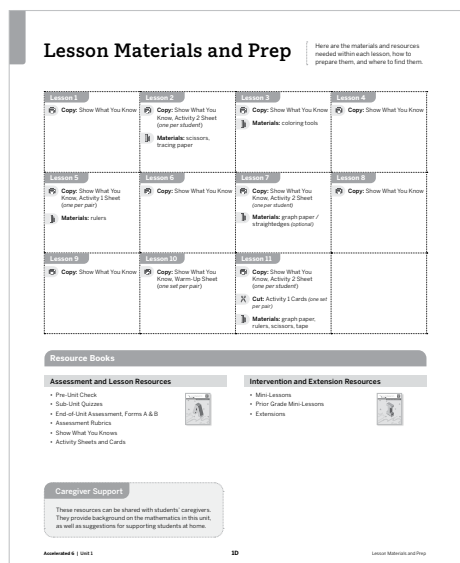
Some lessons contain optional sheets that can be used as needed, such as number lines or hundredths charts.



## Preparing Lesson Resources

Use the **Lesson Materials and Prep** pages in the Unit Overview to identify all of the required materials for printing and copying at the unit-level. The pages show which materials need to be cut in advance and which materials will be reused later in lessons.

Additional guidance and optional materials, including materials for students using print when devices are recommended, can be found in **Prep Checklist** of every lesson.



# Assessment Resources



# Unit 1

# **Assessments and Rubrics**

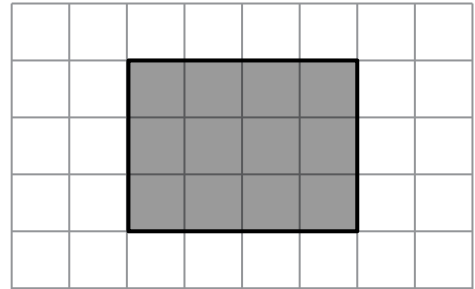


# Pre-Unit Check

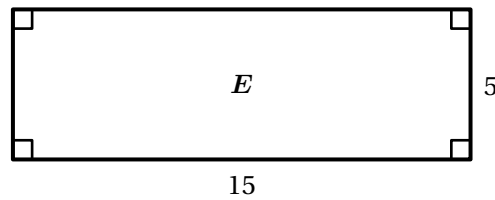
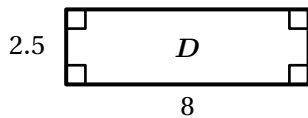
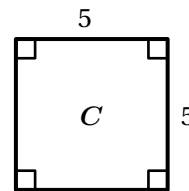
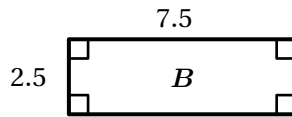
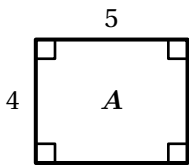
## Unit 1

1. What are some things you know about the area of shapes?

2. Determine the area of the rectangle. Each small square in the grid represents 1 square centimeter.

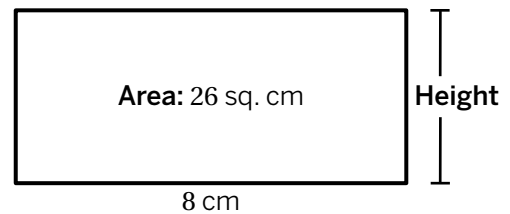


3. Circle *all* of the rectangles that have an area of 20 square units.



4. Determine the height of this rectangle.

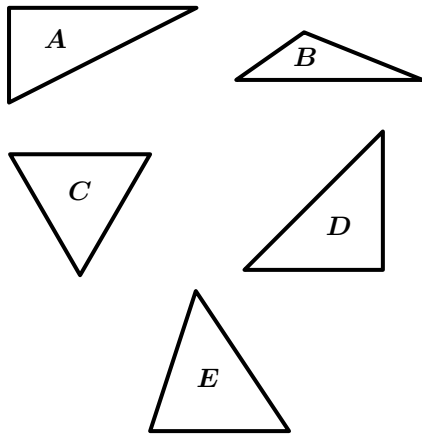
Height: ..... centimeters



**Pre-Unit Check (continued)**

**Unit 1**

5. Here are several figures. Circle *all* the figures that look like right triangles.

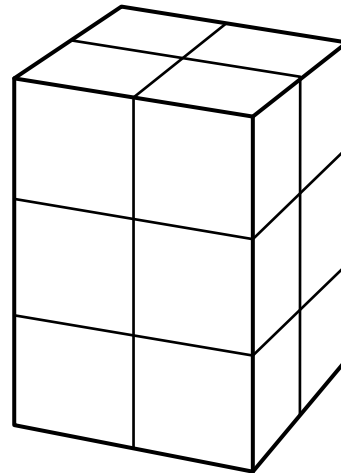


Show or explain your thinking.

6. Determine the volume of this prism.

Volume: ..... cubic units

Show or explain your thinking.



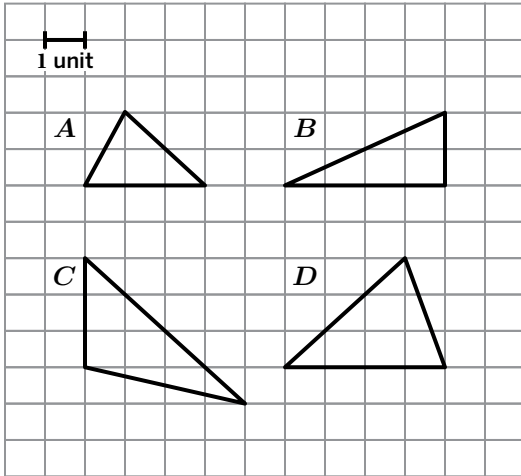
7. Which measure could be found by calculating the volume of an object?

- A. The amount of paint needed to cover a box
- B. How many cubes will fit in a box
- C. How much a box weighs
- D. How many faces a box has

# Sub-Unit Quiz

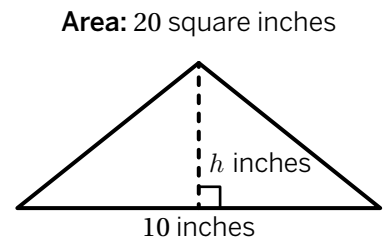
## Unit 1

1. Which triangle has an area of 3 square units?



2. What is the height for the given triangle?

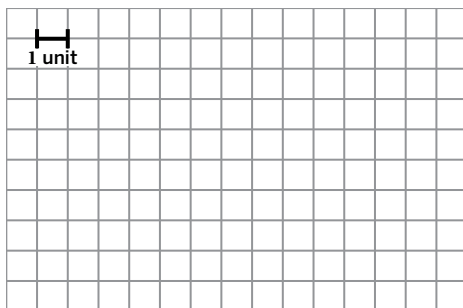
- A. 2 inches
- B. 4 inches
- C. 10 inches
- D. 30 inches



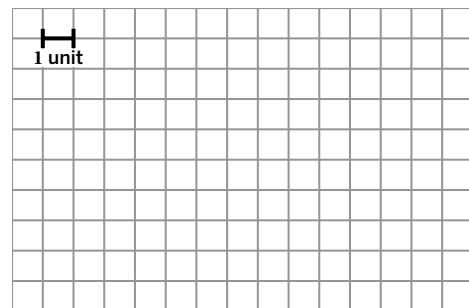
3. Here are two grids.

- a Draw two different triangles that each have an area of 12 square units.

**Triangle 1**



**Triangle 2**



- b Write a base and a height for Triangle 1.

Base: ..... Height: .....

- c Write a base and a height for Triangle 2.

Base: ..... Height: .....

**Sub-Unit Quiz (continued)**

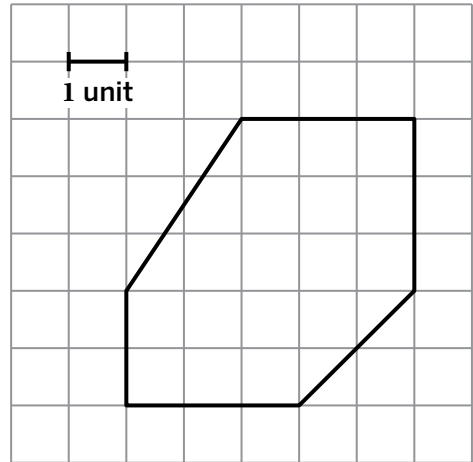
**Unit 1**

4. Here is a polygon.

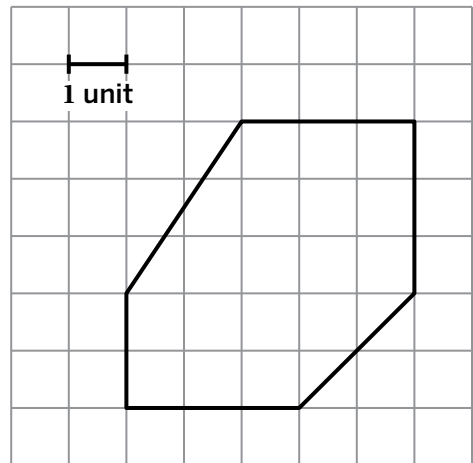
- a Determine the area of this polygon.

Area: ..... square units

Show or explain your thinking.

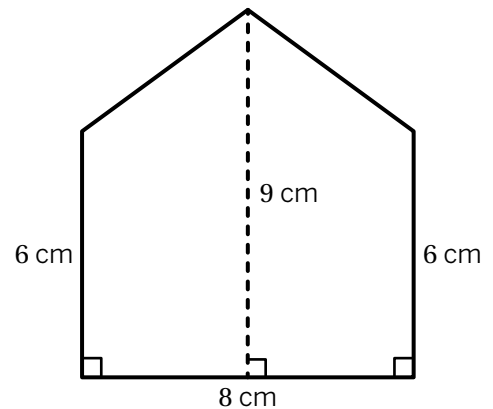


- b Show or explain a different way to determine the area of the same polygon.



5. Determine the area of this polygon.


Area: ..... square centimeters



 Standard	MA.6.GR.2.1	MA.6.GR.2.2
Problem(s)	1, 2, 3a, 3b, 3c	4a, 4b, 5

Problem 1  Standards: MA.6.GR.2.1, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>Triangle A</b></p>			<p>Incorrect choice.</p> <p>Students who select <i>Triangle D</i> may have used the height as the area.</p>

Problem 2  Standard: MA.6.GR.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>4 inches</b></p>			<p>Incorrect choice.</p> <p>Students who select <i>2 inches</i> may have divided the area by the base.</p>

Problem 3a  Standards: MA.6.GR.2.1, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>Responses vary. Sketches show two different triangles with an area of 12 square units.</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Sketches include two congruent triangles that have an area of 12 square units each.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Sketches include a triangle that has an area of 6 square units or one triangle that has an area of 12 square units.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Sketches show triangles that do not have an area of 12 square units each.</p>

Problem 3b				Standard: MA.6.GR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response:</p> <p><i>Responses vary. The base and height should be positive numbers with a product of 24.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who correctly measure one length and incorrectly measure a second length may have miscounted.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who measure a diagonal side of a triangle may not understand that the base and height of a triangle are perpendicular.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.GR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response:</p> <p><i>Responses vary. The base and height should be positive numbers with a product of 24.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who correctly measure one length and incorrectly measure a second length may have miscounted.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who measure a diagonal side of a triangle may not understand that the base and height of a triangle are perpendicular.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4a			
Standards: MA.6.GR.2.2, MTR.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>20 square units. Responses vary. I divided the polygon into a square, a rectangle, and two triangles. The area of the square was 9 and the rectangle was 6. I found the area of each triangle and added everything together to get 20.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Students who write “52 square units” may have counted every square unit that is at least partly included.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4b			
Standards: MA.6.GR.2.2, MTR.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response with <b>correct</b> explanation that is different from 4a.</p> <p><i>Responses vary. I drew a box around the shape and found its area to be 25 square units. Then I subtracted the areas of the two triangles and got 20.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

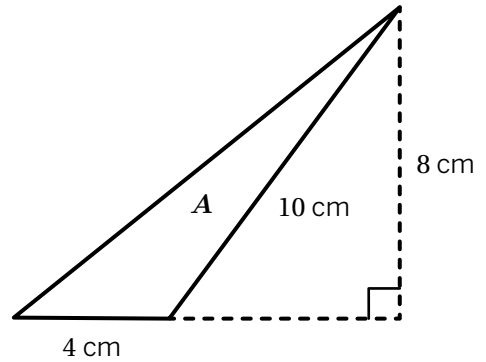
Problem 5			
Standards: MA.6.GR.2.2, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>60 square centimeters</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write 72 may have multiplied the base of the polygon by the height.</p>

# End-of-Unit Assessment

## Unit 1

1. What is the area of triangle *A*?

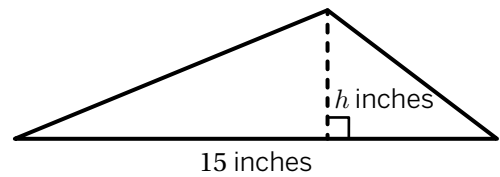
- A. 40 square centimeters
- B. 16 square centimeters
- C. 20 square centimeters
- D. 32 square centimeters



2. What is the matching height for the given base of this triangle?

- A. 2 inches
- B. 4 inches
- C. 15 inches
- D. 45 inches

**Area:** 30 square inches



3. Draw two different triangles that each have an area of 18 square units.

**Triangle 1**

**Triangle 2**

**End-of-Unit Assessment (continued)**

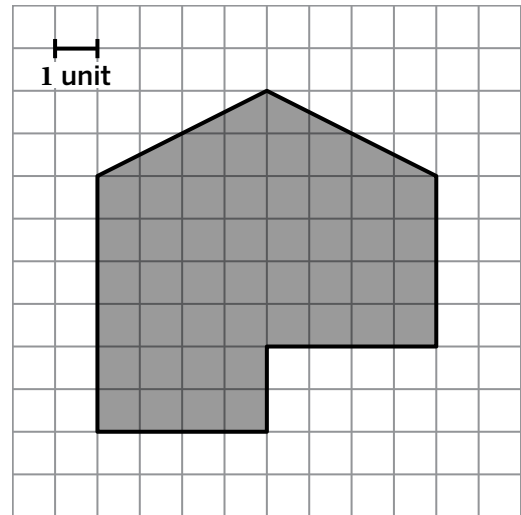
**Unit 1**

4. Here is a shape.

- a What is the area of this shape?

Area: ..... square units

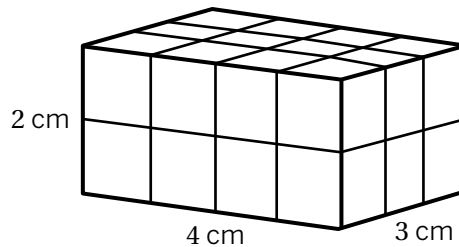
Show or explain your thinking.



- b Show or explain a different way to determine the area of the same shape.

5. Here is the expression Sol wrote to calculate the surface area of this rectangular prism.

**Sol**  
 $l \times w \times h$   
 $4 \times 2 \times 3$   
**24 square centimeters**



- a Describe the mistake that Sol made.

- b What is the surface area of this prism?

Show or explain your thinking.

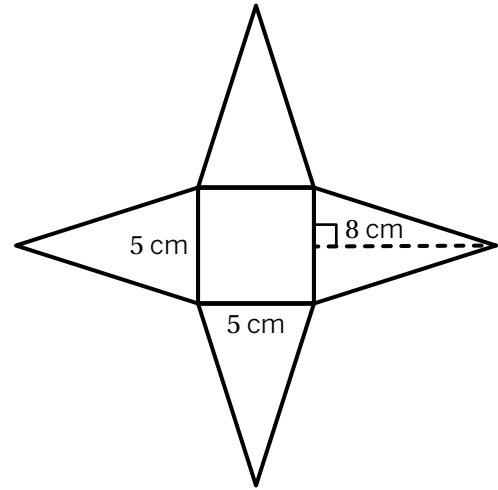
**End-of-Unit Assessment (continued)**

**Unit 1**

6. Here is a net made of four identical triangles and a square.

- a If this net were folded, what type of polyhedron would it make?
- b What is the surface area of that polyhedron?

Show or explain your thinking.



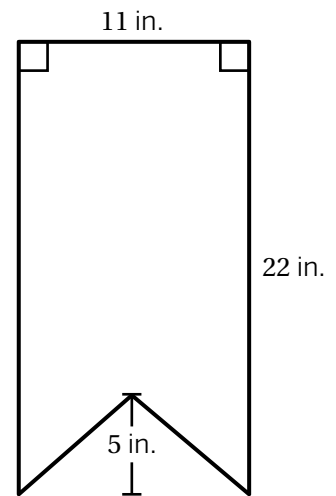
7. Joel is going to use this board to make a sign.

- a What is the area of the front of Joel's sign?

Show or explain your thinking.

- b Joel found a kit of rainbow paints that covers 100 square inches.

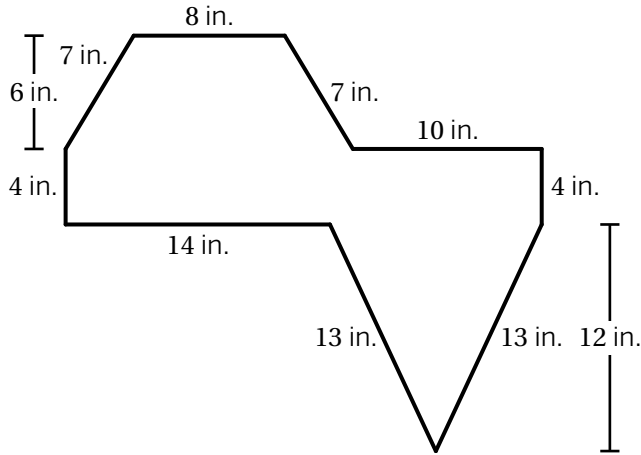
How many kits would he need to cover the front and back of the sign?



**End-of-Unit Assessment** (continued)


**Unit 1**


8. Calculate the area of the composite figures below.



<b>Standard</b>	MA.6.GR.2.1	MA.6.GR.2.2	MA.6.GR.2.4	MA.7.GR.1.2
<b>Problem(s)</b>	1, 2, 3	4a, 4b, 5a, 7a, 7b	5b, 6a, 6b	8

<b>Problem 1</b>				 <b>Standard: MA.6.GR.2.1</b>
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>	
<p><b>Correct</b> choice:</p> <p><b>16 square centimeters</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>20 square centimeters</i> may have used 10 centimeters as the height.</p> <p>Students who select <i>32 square centimeters</i> may have calculated the area of a parallelogram.</p>	

<b>Problem 2</b>				 <b>Standard: MA.6.GR.2.1</b>
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>	
<p><b>Correct</b> choice:</p> <p><b>9 inches</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>2 inches</i> may have divided the area by the base.</p>	

<b>Problem 3</b>				 <b>Standards: MA.6.GR.2.1, MTR.5.1</b>
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>	
<p><b>Correct</b> response:</p> <p><b>Responses vary. Sketches show two different triangles with an area of 18 square units.</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Sketches include two congruent triangles that have an area of 18 square units each.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Sketches include two polygons that have an area of 18 square units that are not triangles or one triangles that has an area of 18 square units.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Sketches show triangles that do not have an area of 18 square units each.</p>	

Problem 4a		Standards: MA.6.GR.2.2, MTR.5.1, MTR.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>48 square units.</b>  <i>Responses vary. I divided the shape into two rectangles and a triangle. For the rectangles, I calculated <math>b \times h</math> for each and then added them together and I got 40 square units. For the triangle, I calculated <math>b \times h \div 2</math> and got 8 square units. The total area is <math>40 + 8 = 48</math> square units.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>E.g., Students who write “52 square units” may have counted every square unit that is at least partly shaded.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4b		Standards: MA.6.GR.2.2, MTR.5.1, MTR.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response with <b>complete</b> explanation that is different from 4a.</p> <p><i>Responses vary. I drew a square around the shape and used <math>b \times h</math> to determine its area is 64 square units. Then I calculated the area of each triangle to subtract using <math>b \times h \div 2</math> and got 4 square units per triangle. Next, I counted the squares in the remaining rectangle and got 8 square units. The area is <math>64 - 4 - 4 - 8 = 48</math> square units.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5a			
Standards: MA.6.GR.2.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary. Sol calculated the volume of the prism instead of the surface area. He should have calculated the area of each face and added them together.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes that Sol should have calculated <math>b \times h</math> of each face, but does not mention the sum of the areas.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “Sol should have multiplied by 2” may recognize that there are 2 of each face.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b			
Standard: MA.6.GR.2.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>52 square centimeters. Responses vary. There are two faces whose areas are 8 square centimeters, two faces whose areas are 6 square centimeters, and two faces whose areas are 12 square centimeters. So the surface area is <math>8 + 8 + 6 + 6 + 12 + 12 = 52</math> square centimeters.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., “I added all the faces.”</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write “26 square centimeters” may have calculated the sum of the areas of the visible surfaces only.</p> <p>Students who write “24 square centimeters” may have calculated the volume of the prism.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			Standard: MA.6.GR.2.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>Square pyramid or rectangular pyramid</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “pyramid” may recognize that the net folds into a pyramid, but have forgotten to include the base in the name.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “triangular prism” may have recognized that both triangular prisms and rectangular pyramids have faces that are rectangles and triangles.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b			Standard: MA.6.GR.2.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>105 square centimeters.</b>  <b>Responses vary. The area of the square base is <math>l \times w = 25</math> square centimeters. There are four triangles whose areas are <math>b \times h \div 2 = 20</math> square centimeters each. The surface area is <math>20 + 20 + 20 + 20 + 25 = 105</math> square centimeters.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who write “185 square centimeters” may not have divided by 2 when calculating the area of each triangle.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., “I added the base and the sides.”</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write “45 square centimeters” may have calculated the sum of the areas of the square and one triangle.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 7a			
Standard: MA.6.GR.2.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>214.5 square inches.</b>  <i>Responses vary. I made a rectangle around the sign whose area is <math>b \times h = 11 \times 22 = 242</math> square inches. Then I subtracted the area of the missing triangle, <math>b \times h \div 2 = 27.5</math>, to get 214.5 square inches.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p> <p>Students who write “269.5 square inches” may have added the area of the missing triangle at the bottom of the sign instead of subtracting it.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., “I found the area of the rectangular part and the triangular part.”</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write “187 square inches” may have calculated the area of the triangle at the bottom of the board as a parallelogram.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 7b			
Standard: MA.6.GR.2.2, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>5 kits or 4.29 kits.</b>  <i>Students' responses depend on their responses in Problem 7a.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “4 kits” may have rounded down to the nearest kit.</p> <p>Students who write “3 kits” may have thought they only needed to cover one side of the sign.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “429 kits” may have calculated the total area of the front and back of the sign rather than determining the number of kits needed.</p>	<p>Response shows <b>limited understanding.</b></p>

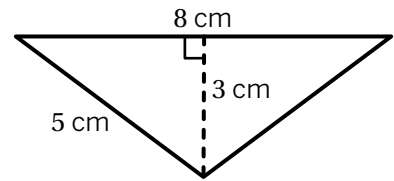
Problem 8		Standard: MA.7.GR.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:  <math>A = 222 \text{ in}^2</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Student finds the area of each polygon, but forgets to add them together, or makes a computational error.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Student uses the incorrect formulas or substitutes the wrong values into the formulas.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Student makes little or no attempt at using area formulas to solve the problem.</p>

# End-of-Unit Assessment

## Unit 1

1. What is the area of this triangle?

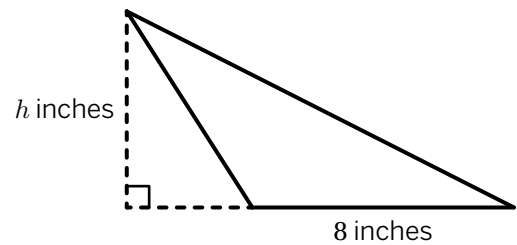
- A. 12 square centimeters
- B. 16 square centimeters
- C. 24 square centimeters
- D. 40 square centimeters



2. What is the matching height for the given base of this triangle?

- A. 3 inches
- B. 6 inches
- C. 96 inches
- D. 192 inches

**Area:** 24 square inches



3. Draw two different triangles that each have an area of 24 square units.

**Triangle 1**

**Triangle 2**

**End-of-Unit Assessment (continued)**

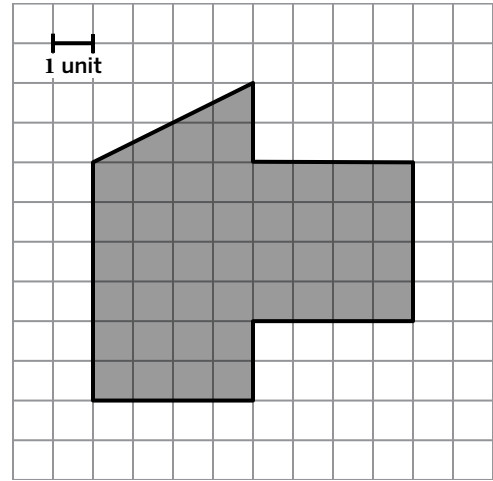
**Unit 1**

4. Here is a shape.

- a What is the area of this shape?

Area: ..... square units

Show or explain your thinking.



- b Show or explain a different way to determine the area of the same shape.

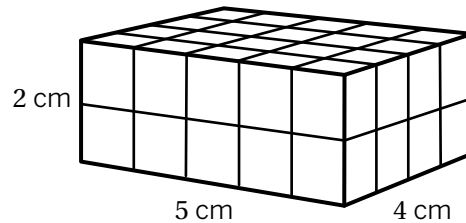
5. Here is the expression Evan wrote to calculate the surface area of this rectangular prism.

Evan

$$h \cdot L + h \cdot W + L \cdot W$$

$$10 + 8 + 20$$

38 square centimeters



- a Describe the mistake that Evan made.

- b What is the surface area of this prism?

Show or explain your thinking.

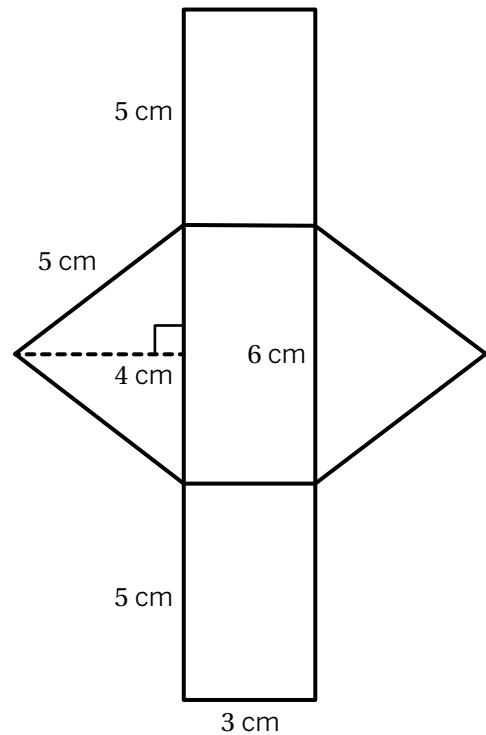
**End-of-Unit Assessment (continued)**

**Unit 1**

6. Here is a net made of three rectangles and two identical triangles.

- a If this net were folded, what type of polyhedron would it make?
- b What is the surface area of that polyhedron?

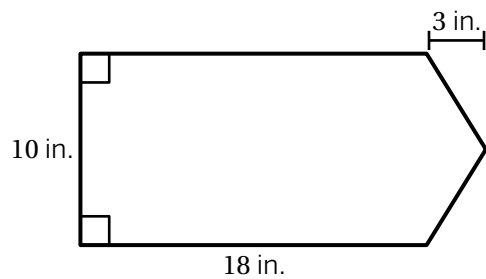
Show or explain your thinking.



7. Charlie is going to use this board to make a sign.

- a What is the area of the front of Charlie's sign?

Show or explain your thinking.



- b Charlie wants to cover the front and the back of the sign.

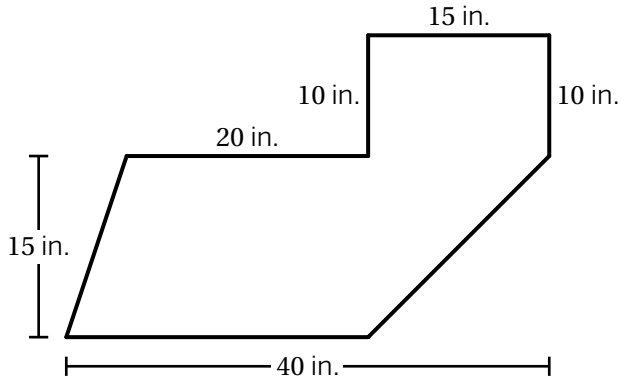
The store sells bottles of paint. Each bottle of paint covers 50 square inches.

How many of these bottles will he need?

**End-of-Unit Assessment** (continued)

**Unit 1**

8. Calculate the area of the composite figures below.



Standard	MA.6.GR.2.1	MA.6.GR.2.2	MA.6.GR.2.4	MA.7.GR.1.2
Problem(s)	1, 2, 3	4a, 4b, 5a, 7a, 7b	5b, 6a, 6b	8

Problem 1				Standard: MA.6.GR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> choice:</p> <p><b>12 square centimeters</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>16 square centimeters</i> may have added all the numbers together.</p> <p>Students who select <i>24 square centimeters</i> may have calculated the area of a parallelogram.</p>	

Problem 2				Standard: MA.6.GR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> choice:</p> <p><b>6 inches</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>192 inches</i> may have multiplied the area and base.</p>	

Problem 3				Standards: MA.6.GR.2.1, MTR.5.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response:</p> <p><b>Responses vary. Sketches show two different triangles with an area of 24 square units.</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Sketches include two congruent triangles that have an area of 24 square units each.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Sketches include two polygons that have an area of 24 square units that are not triangles or one triangles that has an area of 24 square units.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Sketches show triangles that do not have an area of 24 square units each.</p>	

Problem 4a		Standards: MA.6.GR.2.2, MTR.5.1, MTR.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>44 square units. Responses vary. I divided the shape into two rectangles and a triangle. For the rectangles, I calculated <math>b \times h</math> for each and then added them together and I got 40 square units. For the triangle, I calculated <math>b \times h \div 2</math> and got 4 square units. The total area is <math>40 + 4 = 44</math> square units.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Students who write “46 square units” may have counted every square unit that is at least partly shaded.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4b		Standards: MA.6.GR.2.2, MTR.5.1, MTR.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response with <b>complete</b> explanation that is different from 4a.</p> <p><i>Responses vary. I drew a square around the shape and used <math>b \times h</math> to determine its area is 64 square units. Then I calculated the area of the triangle to subtract using <math>b \times h \div 2</math> and got 4 square units. Next, I counted the squares in the remaining rectangles and got 16 square units. The area is <math>64 - 4 - 16 = 44</math> square units.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5a			
Standards: MA.6.GR.2.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary. Evan calculated the area of the visible faces only. He should have multiplied the area of each face by 2.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “Evan should have added more areas” may recognize that Evan only added some of the faces’ areas, not all.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes that Evan should have calculated the area of all of the faces, but does not describe his mistake.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b			
Standard: MA.6.GR.2.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>76 square centimeters. Responses vary. There are two faces whose areas are 10 square centimeters, two faces whose areas are 8 square centimeters, and two faces whose areas are 20 square centimeters. So the surface area is <math>8 + 8 + 10 + 10 + 20 + 20 = 76</math> square centimeters.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., “I added all the faces.”</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write “38 square centimeters” may have calculated the sum of the areas of the visible surfaces only.</p> <p>Students who write “40 square centimeters” may have calculated the volume of the prism.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			Standard: MA.6.GR.2.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>Triangular prism</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “prism” may recognize that the net folds into a prism.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “triangular pyramid” may have recognized that pyramids have faces that are triangles.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b			Standard: MA.6.GR.2.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>72 square centimeters. Responses vary. There are two rectangles with area <math>l \times w = 15</math> and one rectangle with an area of <math>l \times w = 18</math> square centimeters. There are two triangles whose areas are <math>b \times h \div 2 = 12</math> square centimeters each. The surface area is <math>15 + 15 + 18 + 12 + 12 = 72</math> square centimeters.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who write “96 square centimeters” may not have divided by 2 when calculating the area of each triangle.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., “I added the base and the sides.”</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write “60 square centimeters” may have calculated the sum of the areas of the rectangles and one triangle.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 7a				Standard: MA.6.GR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>195 square inches. Responses vary. The sign is the combination of a rectangle and a triangle. The rectangle's area is <math>b \times h = 10 \times 18 = 180</math> square inches. Then I added the area of the triangle, <math>b \times h \div 2 = 15</math>, to get 195 square inches.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p> <p>Students who write "165 square inches" may have subtracted the area of the triangle on the right instead of adding it.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., "I found the area of the rectangular part and the triangular part."</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write "210 square inches" may have calculated the area of the triangle as a parallelogram.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>	

Problem 7b				Standards: MA.6.GR.2.2, MTR.7.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response:</p> <p><b>8 bottles or 7.8 bottles. Students' responses depend on their responses in Problem 7a.</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "7 bottles" may have rounded down to the nearest bottle.</p> <p>Students who write "3.9 or 4 bottles" may have thought they only needed to cover one side of the sign.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "390 bottles" may have calculated the total area of the front and back of the sign rather than determining the number of bottles needed.</p>	<p>Response shows <b>limited understanding.</b></p>	

Problem 8		Standard: MA.7.GR.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><math>A = 600 \text{ in}^2</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Student finds the area of each polygon, but forgets to add them together, or makes a computational error.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Student uses the incorrect formulas or substitutes the wrong values into the formulas.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Student makes little or no attempt at using area formulas to solve the problem.</p>



Unit 1

**Show What You  
Know PDFs**



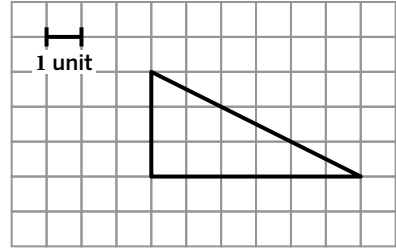
# Show What You Know



1.01

Determine the base, height, and area of the triangle.

Each small square in the grid has an area of 1 square unit.

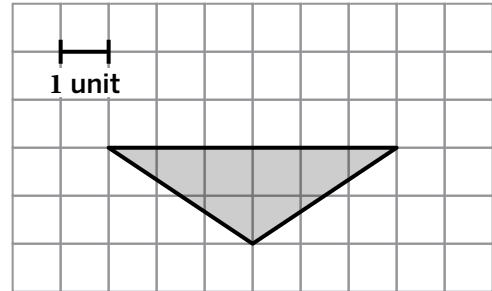


# Show What You Know



1.02

Determine the area of this triangle. Show or explain your thinking.

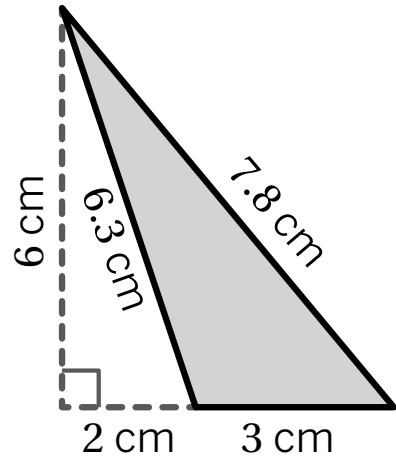


# Show What You Know



1.03

Calculate the area of the shaded triangle.

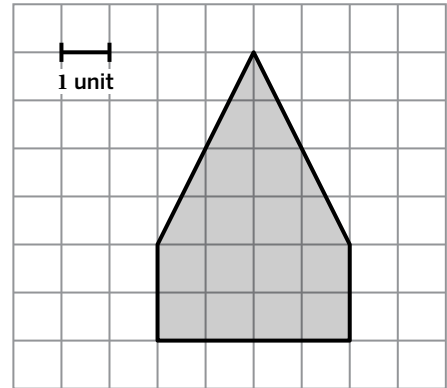


# Show What You Know



1.04

Determine the area of this shape.



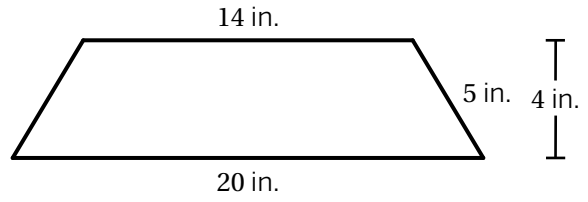
# Show What You Know



1.05

Calculate the area of the composite figure.

Show or explain your thinking.



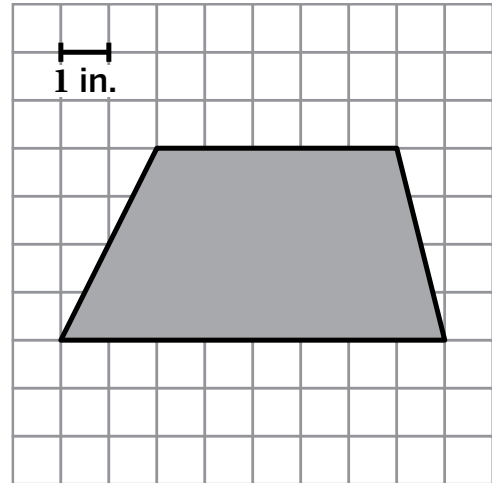
# Show What You Know



1.06

What is the area of this polygon?

Draw on the image if it helps with your thinking.



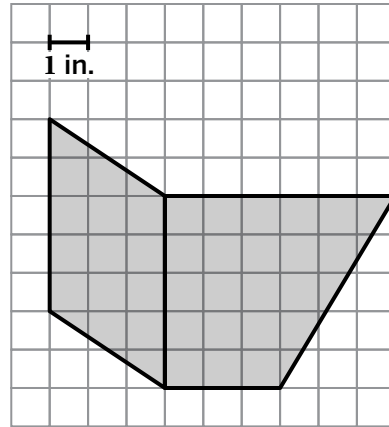
# Show What You Know



1.07

What is the area of this polygon?

Show or explain your thinking.

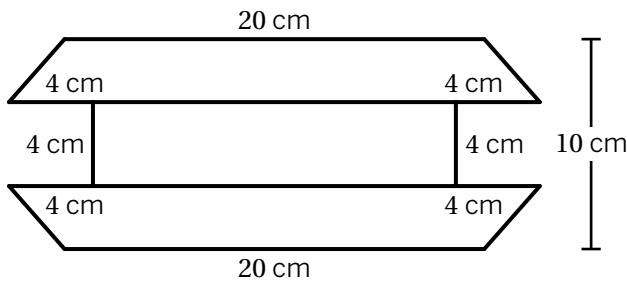


# Show What You Know



1.08

Find the area of the composite figure below.



Sketch a way to decompose the figure to help show your thinking.

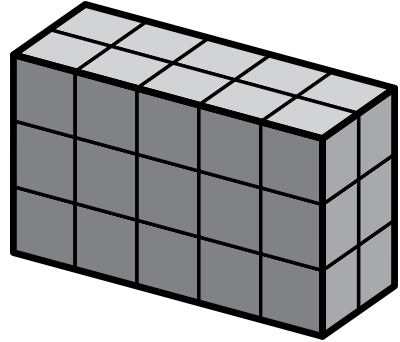
Explain your thinking.

# Show What You Know



1.09

What is the surface area of this rectangular prism?  
Show or explain your thinking.

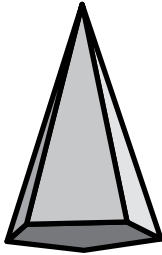


# Show What You Know

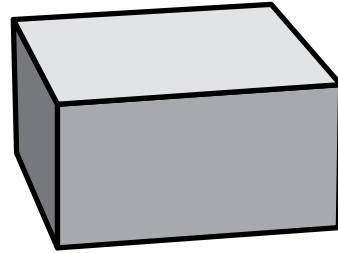


1.10

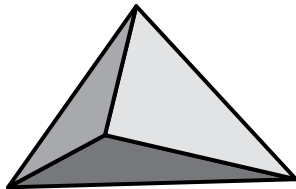
Circle whether each polyhedron is a *prism*, a *pyramid*, or *neither*.



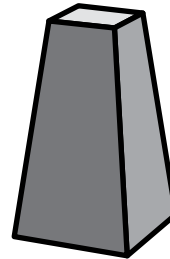
Pyramid   Prism   Neither



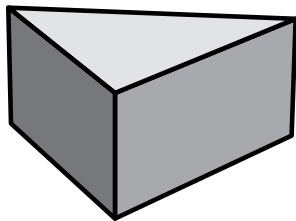
Pyramid   Prism   Neither



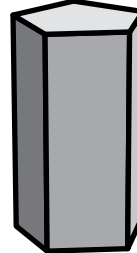
Pyramid   Prism   Neither



Pyramid   Prism   Neither



Pyramid   Prism   Neither



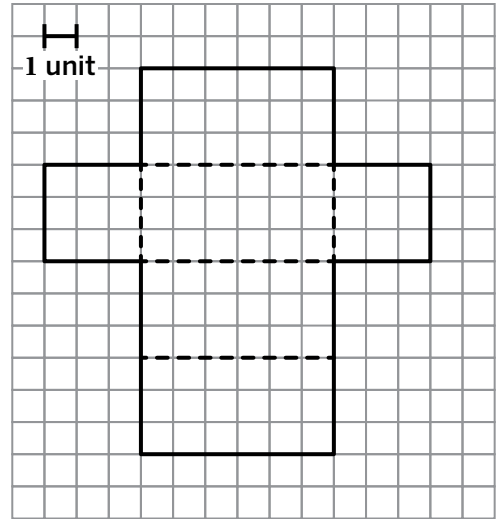
Pyramid   Prism   Neither

# Show What You Know




1.11

- a What polyhedron does this net create when folded?
  
  
  
  
  
  
  
  
  
  
- b What is the surface area of this polyhedron?



## Show What You Know Lesson 1

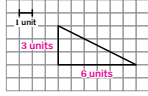
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  1.01

Determine the base, height, and area of the triangle.

Each small square in the grid has an area of 1 square unit.


**Base = 6 units; Height = 3 units; Area = 9 square units**



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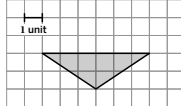
## Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  1.02

Determine the area of this triangle. Show or explain your thinking.


**6 square units. Explanations vary. I drew a rectangle around the triangle. Then I calculated the area of the rectangle and divided it by 2.**



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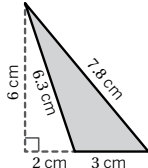
## Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  1.03

Calculate the area of the shaded triangle.


**9 square centimeters**



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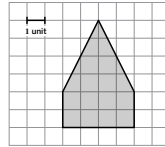
## Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  1.04

Determine the area of this shape.


**16 square units**



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Show What You Know Lesson 5

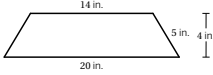
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.05**

Calculate the area of the composite figure.

Show or explain your thinking.


**68 square inches. Responses vary.**  
**I divided the figure into a rectangle and two right triangles.**  
**Then, I calculated the total area of the figure by adding the areas of the rectangle and triangles.**



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Show What You Know Lesson 6

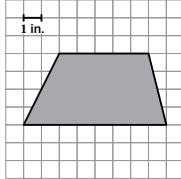
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.06**

What is the area of this polygon?

Draw on the image if it helps with your thinking.


**26 square inches**



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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

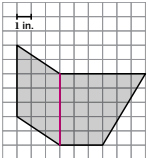
**Show What You Know**  **1.07**

What is the area of this polygon?

Show or explain your thinking.

**37.5 square inches**


**Explanations may vary. I divided the figure into a parallelogram and a trapezoid. The parallelogram had a base of 5 inches and a height of 3 inches. The trapezoid had bases of 6 inches and 3 inches and a height of 5 inches. The parallelogram has an area of  $A = 5 \times 3 = 15$  square inches. The trapezoid has an area of  $A = \frac{(6+3)}{2} \times 5 = 22.5$  square inches.  $15 + 22.5 = 37.5$  square inches.**



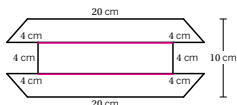
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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.08**

Find the area of the composite figure below.



Sketch a way to decompose the figure to help show your thinking.

**224 sq. cm. Responses vary. Sample response shown on figure.**


Explain your thinking.

**Explanations vary. I divided the figure into a rectangle with a length of 20 cm and a width of 4 cm. The other parts of the figure are two congruent trapezoids with bases 20 cm and 28 cm and a height of 3 cm. The area of the rectangle is  $A = (20)(4) = 80$  sq. cm. The area of each trapezoid is  $A = \frac{1}{2}(3)(20 + 28) = 72$  sq. cm. The total area of the figure is  $2(72) + 80 = 224$  sq. cm.**

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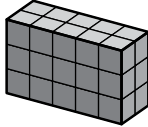
Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.09**

What is the surface area of this rectangular prism?  
Show or explain your thinking.


62 square units. Responses vary. I counted that there were 2 sides that were 3 by 5 rectangles, 2 sides that were 2 by 3 rectangles, and 2 sides that were 2 by 5 rectangles. Then, I multiplied each group and added them up:  $2(3 \times 5) = 30$ ,  $2(2 \times 3) = 12$ , and  $2(2 \times 5) = 20$ .  $30 + 12 + 20 = 62$  square units.




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Show What You Know Lesson 10

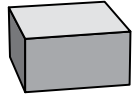
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.10**


Circle whether each polyhedron is a prism, a pyramid, or neither.



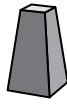
Pyramid Prism Neither



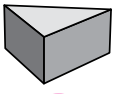
Pyramid Prism Neither



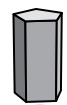
Pyramid Prism Neither



Pyramid Prism Neither



Pyramid Prism Neither




Pyramid Prism Neither

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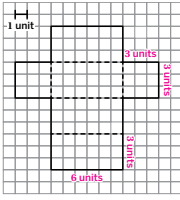
Show What You Know Lesson 11

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **1.11**

a. What polyhedron does this net create when folded?  
Rectangular prism

b. What is the surface area of this polyhedron?  
90 square units



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# Unit 2

## **Assessments and Rubrics**



# Pre-Unit Check

## Unit 2

1. A cookie recipe says there should be 3 times as much flour as there is sugar. I have 6 cups of sugar. Which expression represents how much flour I need?

- A.  $6 + 3$
- B.  $6 - 3$
- C.  $6 \cdot 3$
- D.  $6 \div 3$

2. A box of brownie mix calls for 2 eggs and  $\frac{1}{2}$  cup of oil.

- a How many eggs and how much oil would you need for 2 boxes of brownie mix?
  
- b How many eggs and how much oil would you need for 3 boxes of brownie mix?

3. Here are several fractions.

a Two of these fractions are equivalent. Which ones are they? Circle them.

$\frac{2}{3}$

$\frac{4}{5}$

$\frac{6}{9}$

Explain how you know.

b Order these fractions from *least* to *greatest*.

$\frac{5}{6}$

$\frac{6}{5}$

$\frac{3}{3}$

$\frac{2}{3}$

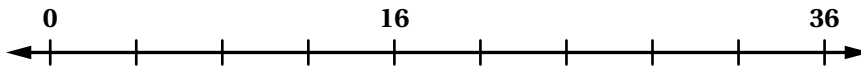
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Least

Greatest

**Pre-Unit Check (continued)****Unit 2**

4. Label the value of each tick mark on the number line.



5. The number 2 is a factor of 12. Circle all of the other factors of 12 from the list below.

1 (2) 3 4 5 6 7 8 9 10 11 12

6. Complete each equation with a number that makes it true.

a  $4 \cdot \dots = 20$

b  $8 \cdot \dots = 32$

c  $32 \cdot \dots = 8$

d  $20 \cdot \dots = 4$

7. Each grid shows the numbers from 1 to 30.

- a Circle all the *multiples* of 6.

1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30

- b Circle all the *factors* of 24.

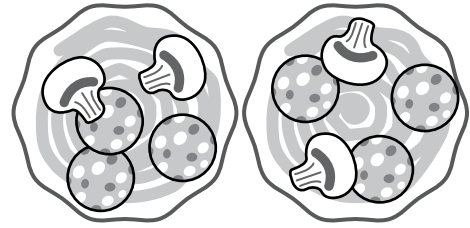
1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30

# Sub-Unit Quiz

## Unit 2

1. Which statement is true?

- A. The ratio of pizzas to mushroom slices is 4 to 2.
- B. The ratio of mushroom slices to pizzas is 2 to 1.
- C. There are two pizzas for every pepperoni.
- D. There are six pepperonis for every pizza.



2. Select *all* of the ratios that are equivalent to 8 : 6.

- A. 10 : 8       B. 4 : 3       C. 6 : 4       D. 40 : 30       E. 16 : 12

3. You can make pancakes with just eggs and bananas! Here is one recipe.

- a How many eggs do you need if you have 6 bananas?
  
- b How many eggs and how many bananas do you need to serve 6 people?

Eggs: ..... Bananas: .....

**Two-Ingredient Pancakes**  
Serves 4 People

- 6 eggs
- 2 bananas

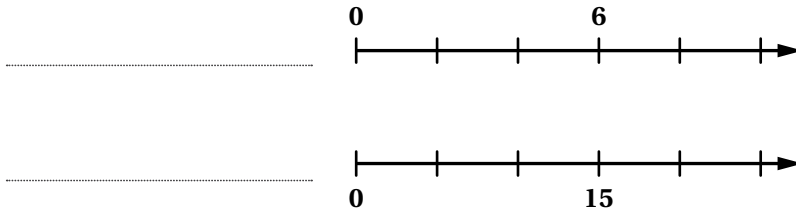
4. A recipe for lemonade uses 5 scoops of mix for every 4 cups of water.

Mai says, “No matter how much lemonade you make, there is always one more scoop of mix than cups of water.” Is she correct? Explain your reasoning.

**Sub-Unit Quiz (continued)**

**Unit 2**

5. At the stationery store, it costs \$15 for 6 notebooks.



- a Label each number line with a title and units to represent the situation.
- b Fill in the missing values on the double number line.
- c Write a question you could answer using the double number line.
- d Answer your question.

6. A trail mix recipe calls for  $\frac{1}{4}$  cup of peanuts for every 1 cup of granola. Complete the table to show equivalent ratios.

Cups of Peanuts	Cups of Granola	Cups of Trail Mix
$\frac{1}{2}$		$2\frac{1}{2}$
$\frac{3}{4}$		
	4	

Standard	MA.6.AR.3.1	MA.6.AR.3.3
Problem(s)	1, 4	2, 3a, 3b, 5a, 5b, 5c, 5d, 6

Problem 1			Standard: MA.6.AR.3.1
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p>The ratio of mushroom slices to pizzas is 2 to 1.</p>			<p>Incorrect choice.</p> <p>Students who select <i>The ratio of pizzas to mushroom slices is 4 to 2</i> may have reversed the order of the ratio.</p>

Problem 2			Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>All correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>• 4 : 3</li> <li>• 40 : 30</li> <li>• 16 : 12</li> </ul>	<p>One or two correct choices and no incorrect choices.</p> <p>All correct choices and one incorrect choice.</p>	<p>One or two correct choices and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>

Problem 3a			Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p>18 eggs</p>			<p>Response shows limited understanding.</p> <p>Students who write "2 eggs" may have divided 6 by 3 instead of multiplied.</p>

Problem 3b		Standard: MA.6.AR.3.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>9 eggs and 3 bananas</b></p>		<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes one correct answer.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "8 eggs and 4 bananas" may have added 2 to each ingredient.</p>

Problem 4		Standards: MA.6.AR.3.1, MTR.4.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>No. Explanations vary. If you double the recipe, then you would have 10 scoops of mix and 8 cups of water. This doesn't follow Mai's rule.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5a		Standard: MA.6.AR.3.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <ul style="list-style-type: none"> <li>• <b>Number of Notebooks</b></li> <li>• <b>Cost (dollars)</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>One correct</b> answer and <b>one incorrect</b> answer.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>Only incorrect</b> answers.</p>

Problem 5b				Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <ul style="list-style-type: none"> <li>• 2, 4, 8, 10</li> <li>• 5, 10, 20, 25</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes mostly <b>correct</b> answers with minor errors in calculation.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes <b>one correct</b> number line and one <b>incorrect</b> number line.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 5c				Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• How many notebooks can I buy for \$20?</li> <li>• How much does it cost to buy 10 notebooks?</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a question that uses the double number line but doesn't reference notebooks and costs.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes a question related to notebooks and cost that can't be solved using the double number line.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 5d				Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><i>Responses vary depending on students' questions from 5c.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 6				Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>All correct numbers.</p> <p><math>\frac{1}{2}</math>, 2</p> <p>3, <math>3\frac{3}{4}</math></p> <p>1, 5</p>	<p>Four or five correct numbers.</p>	<p>Two or three correct numbers.</p>	<p>One or no correct numbers.</p>	

# End-of-Unit Assessment

## Unit 2

1. Determine the greatest common factor (GCF) or the least common multiple (LCM).

**a** What is the LCM of 6 and 9?

- A. 3
- B. 18
- C. 36
- D. 54

**b** What is the GCF of 8 and 12?

- A. 2
- B. 4
- C. 24
- D. 96

2. Select *all* of the ratios that are equivalent to  $20 : 12$ .

- A.  $60 : 36$      B.  $10 : 2$      C.  $5 : 2$      D.  $30 : 18$      E.  $24 : 16$

3. Caleb's favorite shade of green uses a ratio of 5 cups of blue paint to 3 cups of yellow paint.

**a** Caleb bought 12 cups of yellow paint. How much blue paint will he need to make his favorite shade of green?

**b** Caleb needs 40 cups of green paint to paint his room. How much of each color will he need?

Blue Paint: .....      Yellow Paint: .....

**End-of-Unit Assessment (continued)**

**Unit 2**

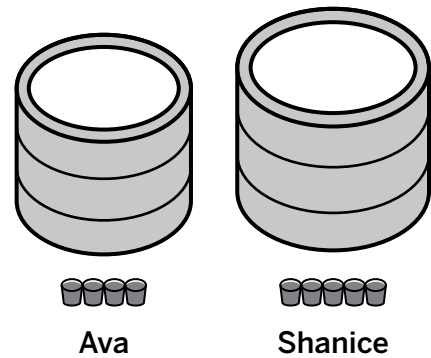
4. A sign at a store says 3 oranges cost \$2.25.
- a How much would 12 oranges cost?
  - b How much would 7 oranges cost? Show or explain your thinking.

5. Ava and Shanice mixed different ratios of red and white paint.

**Ava:** 4 grams of red for every 6 liters of white.

**Shanice:** 5 grams of red for every 8 liters of white.

Whose mixture will make a darker red?



Explain your thinking.

6. Jayden is saving up for \$100 concert tickets. For every 5 hours he works, he get paid \$40. Jayden made a table to determine how many hours he needs to work to earn \$100, but he made a mistake.

Hours	Dollars Earned
5	40
1	8
100	800

- a What did Jayden do well? What mistake did Jayden make?
- b Determine how many hours he needs to work to earn \$100.


**End-of-Unit Assessment** (continued)


**Unit 2**


7. Metropolis requires that for every 5 plots of land used for buildings, 2 plots of land be used for green space.

**a** A company bought 70 plots of land. How many plots can it use for buildings?

**b** Write a question about this ratio relationship that has the answer “30 plots of land.”

 Standard	MA.6.NSO.3.1	MA.6.AR.3.3
Problem(s)	1a, 1b	2, 3a, 3b, 4a, 4b, 5, 6a, 6b, 7a, 7b

Problem 1a			
 Standards: MA.6.NSO.3.1, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>18</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 3 may have thought about common factors.</p> <p>Students who select 36 may have found a common multiple but not the least.</p> <p>Students who select 54 may have thought that multiplying 6 and 9 would give them the least common multiple. This strategy is only true sometimes.</p>

Problem 1b			
 Standards: MA.6.NSO.3.1, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>4</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 2 may have found a common factor but not the greatest.</p> <p>Students who select 24 may have thought about common multiples.</p> <p>Students who select 96 may have thought about common multiples.</p>

Problem 2			
Standards: MA.6.AR.3.3, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• 60 : 36</li> <li>• 30 : 18</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p> <p>Students who select 10 : 2 may have subtracted 10 from each value in the original ratio.</p> <p>Students who select 24 : 16 may have noticed that you can create this ratio by adding 4 to each value in the original ratio.</p>

Problem 3a			
Standard: MA.6.AR.3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>20 cups</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "14 cups" may have noticed that there are 9 more cups of yellow paint and added 9 to the cups of blue paint.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b			
Standard: MA.6.AR.3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>25 cups of blue paint and 15 cups of yellow paint</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "24 cups of yellow paint" may have calculated how much yellow paint is needed for 40 cups of blue paint.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes cups of blue and yellow paint in the correct ratio but does not sum to 40 cups.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4a			Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>\$9</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 27 may have used \$2.25 as the unit rate.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b			Standard: MA.6.AR.3.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>\$5.25. Explanations vary. I figured out that it costs \$0.75 for each orange, so 7 oranges would cost <math>0.75 \cdot 7 = \\$5.25</math>.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who write \$5.18 or \$5.175 may have rounded <math>\frac{7}{3}</math> to 2.3.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write \$15.75 may have used \$2.25 as the unit rate.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5			Standards: MA.6.AR.3.3, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Ava's. Explanations vary. If both mixtures use 24 liters of white, Ava's mixture uses <math>4 \cdot 4 = 16</math> grams of red paint, while Shanice's mixture uses <math>5 \cdot 3 = 15</math> grams of red paint.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who write "Shanice" may have answered "Whose will make a lighter red?"</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write "Shanice" may have noticed that there are more grams of red listed in Shanice's ratio.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a <span style="float: right;">Standards: MA.6.AR.3.3, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• <b>Something Jayden did well was correctly calculating how much he earns each hour.</b></li> <li>• <b>Jayden’s mistake was calculating how much he would earn from 100 hours of work instead of how many hours he would need to work to earn \$100</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response states that something Jayden did well was calculating how much he earns per hour, and that his mistake was not using the table correctly.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response states that Jayden’s mistake was calculating how much he would earn in 100 hours.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6b <span style="float: right;">Standard: MA.6.AR.3.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>12.5 hours or 13 hours (if he can only work hour-long shifts)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “He needs to work 60 hours” may have calculated <math>100 - 40</math></p>	<p>Response shows <b>limited understanding.</b></p>

Problem 7a			
Standards: MA.6.AR.3.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: 50 plots of land</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “28 plots” may have calculated how many plots of green space you would need for 70 plots of buildings.</p> <p>Students who write “175 plots” may have calculated how many plots of buildings can be built to accompany 70 plots of green space.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b			
Standards: MA.6.AR.3.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: Responses vary.</p> <ul style="list-style-type: none"> <li>• How many building plots can you make if you use 12 plots for green space?</li> <li>• How many building plots can you make from 42 plots of land?</li> <li>• How many plots of green space do you need if you want 75 plots for buildings?</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a question with an answer of 30 plots of land, but does not reference the given situation.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes a question that does not have an answer of 30 plots of land, but does reference the given situation.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Response includes a question with the number 30.</p>

# End-of-Unit Assessment

## Unit 2

1. Determine the greatest common factor (GCF) or least common multiple (LCM).

**a** What is the GCF of 6 and 9?

- A. 3
- B. 18
- C. 36
- D. 54

**b** What is the LCM of 8 and 12?

- A. 2
- B. 4
- C. 24
- D. 96

2. Select *all* of the ratios that are equivalent to 8 : 20.

- A. 3 : 15       B. 4 : 5       C. 12 : 30       D. 16 : 28       E. 24 : 60

3. Riku's favorite shade of orange uses a ratio of 4 cups of red paint to 3 cups of yellow paint.

**a** Riku bought 12 cups of yellow paint. How much red paint will he need to make his favorite shade of orange?

**b** Riku needs 42 cups of orange paint to paint his room. How much of each color will he need?

Red Paint: ..... Yellow Paint: .....

**End-of-Unit Assessment (continued)**

**Unit 2**

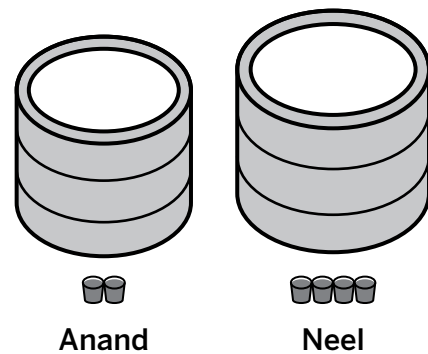
4. A sign at a store says that 5 lemons cost \$2.75.
- a How much would 15 lemons cost?
  - b How much would 7 lemons cost? Show or explain your thinking.

5. Anand and Neel mixed different ratios of blue and white paint.

**Anand:** 2 grams of blue for every 5 liters of white.

**Neel:** 4 grams of blue for every 6 liters of white.

Whose mixture will make a darker blue?



Explain your thinking.

6. Lukas is saving up for \$120 sneakers. For every 4 hours he works, he gets paid \$48. Lukas made a table to determine how many hours he would need to work to earn \$120, but he made a mistake.


Hours	Dollars Earned
4	48
1	12
120	1,440


- a What did Lukas do well? What mistake did Lukas make?
- b Determine how many hours Lukas needs to work to earn \$120.

## End-of-Unit Assessment (continued)

## Unit 2

7. The town of Desville requires that for every 6 plots of land used for buildings, 2 plots of land be used for green space.
- a A company bought 24 total plots of land. How many plots can it use for buildings?
  
  
  
  
  
  
  
  
  
  
  - b Write a question about this ratio relationship that has the answer “30 plots of land.”

 Standard	MA.6.NSO.3.1	MA.6.AR.3.3
Problem(s)	1a, 1b	2, 3a, 3b, 4a, 4b, 5, 6a, 6b, 7a, 7b

Problem 1a			
 Standards: MA.6.NSO.3.1, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>3</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 18 may have thought about common multiples.</p> <p>Students who select 36 may have thought about common multiples.</p> <p>Students who select 54 may have thought about common multiples.</p>

Problem 1b			
 Standards: MA.6.NSO.3.1, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>24</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 2 may have thought about common factors.</p> <p>Students who select 4 may have thought about common factors.</p> <p>Students who select 96 may have thought that multiplying 8 and 12 would give the least common multiple. This strategy is only true sometimes.</p>

Problem 2			
Standards: MA.6.AR.3.3, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• 12:30</li> <li>• 24:60</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p> <p>Students who select 3 : 15 may have subtracted 5 from each value in the original ratio.</p> <p>Students who select 16 : 28 may have noticed that the second value is 12 more than the first value in the original ratio.</p>

Problem 3a			
Standard: MA.6.AR.3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>16 cups</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "13 cups" may have noticed that there is 1 more cup of red paint than yellow paint in the original mixture.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b			
Standard: MA.6.AR.3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>24 cups of red paint and 18 cups of yellow paint</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "56 cups of red paint" may have calculated how much red paint is needed for 42 cups of yellow paint.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes cups of yellow and red paint in the correct ratio but does not sum to 42 cups.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4a <span style="float: right;">Standard: MA.6.AR.3.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>\$8.25</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$41.25 may have used \$2.75 as the unit rate.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b <span style="float: right;">Standard: MA.6.AR.3.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation. <b>\$3.85. Explanations vary. I figured out that it costs \$0.55 for each lemon, so 7 lemons would cost <math>0.55 \cdot 7 = \\$3.85</math>.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>Students who write \$19.25 may have used \$2.75 as the unit rate.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5 <span style="float: right;">Standards: MA.6.AR.3.3, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation. <b>Neel's. Explanations vary. If both mixtures use 30 liters of white, Anand's mixture uses <math>2 \cdot 6 = 12</math> grams of blue paint, and Neel's mixture uses <math>4 \cdot 5 = 20</math> grams of blue paint.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p> <p>Students who write "Anand" may have answered "Whose will make a lighter blue?"</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Response includes Neel but reasons that Neel's mixture will be darker because there are more grams of blue listed in Neel's ratio.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.AR.3.3, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• <b>Something Lukas did well was correctly calculating how much he earns each hour.</b></li> <li>• <b>Lukas's mistake was calculating how much he'd earn from 120 hours of work instead of how many hours he'd need to work to earn \$120.</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response states that something Lukas did well was calculating how much he earns per hour, and that his mistake was that he did not use the table correctly.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response states that Lukas's mistake was calculating how much he would earn in 120 hours.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6b			
Standard: MA.6.AR.3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>10 hours</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "Lukas needs to work 72 hours" may have calculated <math>120 - 48</math>.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 7a			
Standards: MA.6.AR.3.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>18 plots of land</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write “8 plots” may have calculated how many plots of green space you would need for 24 plots of buildings.</p> <p>Students who write “72 plots” may have calculated how many plots of buildings can be built to accompany 24 plots of green space.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b			
Standards: MA.6.AR.3.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>Responses vary.</b></p> <ul style="list-style-type: none"> <li>• <b>How many building plots can you make if you used 10 plots for green space?</b></li> <li>• <b>How many building plots can you make from 40 plots of land?</b></li> <li>• <b>How many plots of green space do you need if you want 90 plots for buildings?</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a question with an answer of 30 plots of land, but does not reference the given situation.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes a question that does not have an answer of 30 plots of land, but does reference the given situation.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Response includes a question with the number 30.</p>



Unit 2

**Show What You  
Know PDFs**



# Show What You Know



2.01

Select *all* the true statements.

- A. The ratio of clouds to hearts is 6 to 4.
- B. The ratio of hearts to clouds is 6 to 4.
- C. For every 2 clouds, there are 3 hearts.
- D. For every 3 clouds, there are 2 hearts.
- E. The ratio of hearts to clouds is 3 : 2.

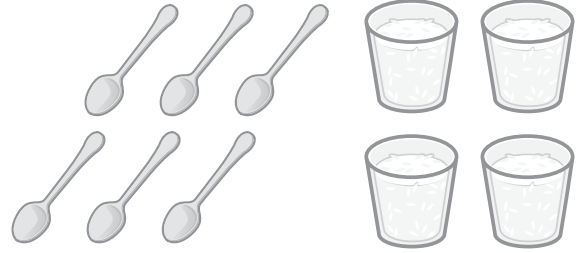


**Show What You Know****2.02**

A recipe for pizza dough begins with these instructions:

Mix 6 teaspoons of yeast for every 4 cups of flour.

Select *all* the ratios that are equivalent to the original recipe.



- A. 3 teaspoons of yeast to 2 cups of flour
- B. 7 teaspoons of yeast to 5 cups of flour
- C. 18 teaspoons of yeast to 12 cups of flour
- D. 4 teaspoons of yeast to 2 cups of flour
- E. 12 teaspoons of yeast to 10 cups of flour

## Show What You Know

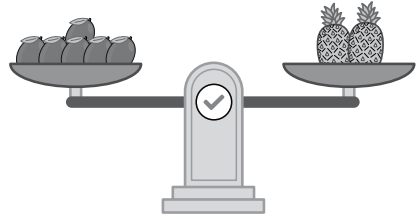


2.03

The scale balances with a ratio of 6 mangoes to 2 pineapples.

Select *all* of the combinations that will balance the scale.

- A. 3 mangoes and 1 pineapple
- B. 7 mangoes and 3 pineapples
- C. 10 mangoes and 6 pineapples
- D. 24 mangoes and 8 pineapples
- E. 60 mangoes and 20 pineapples



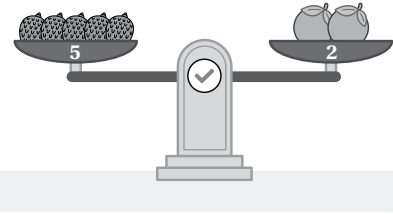
# Show What You Know



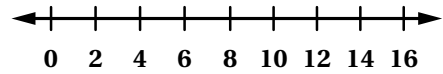
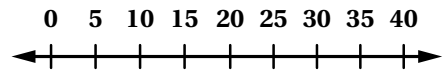
2.04

This scale balances with a ratio of 5 lychees to 2 limes.

How many lychees will balance with 10 limes? Use the double number line if it helps to show your thinking.



Lychees



Limes

# Show What You Know



2.05

Denise mixed yellow paint and blue paint together to make her favorite shade of green. The relationship between the parts of yellow and blue paint that she used is shown in the table. Complete the table. Show or explain your thinking.

Parts of Yellow Paint	1.5		
Parts of Blue Paint	4	12	
Mixture of New Paint			66

# Show What You Know



2.06

What is the least common multiple of 10 and 6?

- 1 2 3 4 5 6 7 8 9 10
- 11 12 13 14 15 16 17 18 19 20
- 21 22 23 24 25 26 27 28 29 30
- 31 32 33 34 35 36 37 38 39 40
- 41 42 43 44 45 46 47 48 49 50
- 51 52 53 54 55 56 57 58 59 60
- 61 62 63 64 65 66 67 68 69 70
- 71 72 73 74 75 76 77 78 79 80
- 81 82 83 84 85 86 87 88 89 90
- 91 92 93 94 95 96 97 98 99 100

## Show What You Know



2.07

What is the greatest common factor of 24 and 40?

Sketch a diagram if it helps with your thinking.

# Show What You Know

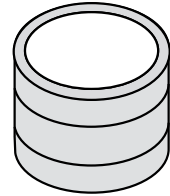
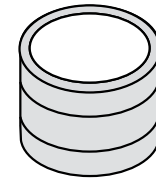


2.08

Here are two new ratios of red tint to white paint:

**Ratio A:** 4 ounces red : 3 gallons white

**Ratio B:** 6 ounces red : 4 gallons white



**A**

**B**

Which ratio will make a darker red? Circle one.

Ratio A    Ratio B    They'll make the same red

Explain your thinking.

**Show What You Know****2.09**

Your community recommends 12 rolls of duct tape and 4 pairs of scissors for every, in the event of a disaster.

Complete the table according to your community's recommendations.

Population	Rolls of Duct Tape	Pairs of Scissors
100	12	4
300		
4,000		
50		

# Show What You Know

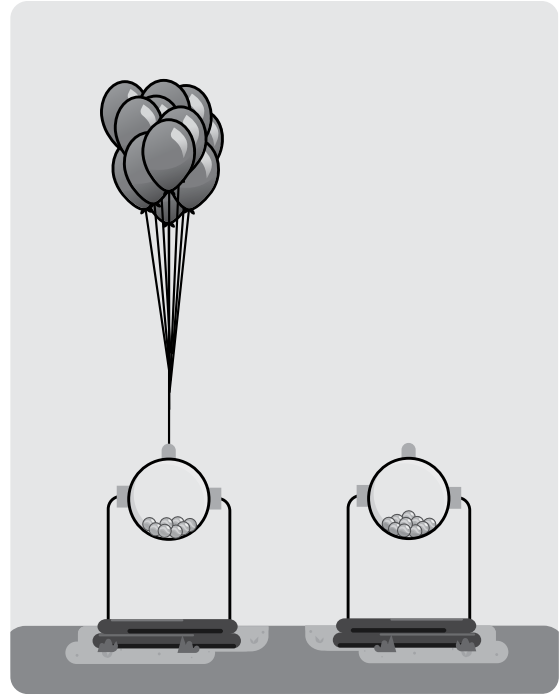


2.10

Red balloons float orange marbles at a ratio of 12 : 8.

How many red balloons will float 10 orange marbles?

Show or explain your thinking.



## Show What You Know



2.11

Here are two problems.

### Problem A

Anya earns \$75 in 5 hours.  
How much money will she earn  
if she works 40 hours?

### Problem B

Irene has \$10 more than Emiliano.  
Emiliano has \$12.  
How much does Irene have?

**a** Which problem could you use equivalent ratios to solve? Explain your thinking.

**b** Answer the problem you chose.

## Show What You Know

**2.12**

6th grade and 7th grade students at a school are trying to reduce how much trash they create.


There are **140** students in 6th grade. Together, they reduced their weekly trash by **42** pounds.

There are **100** students in 7th grade. Together, they reduced their weekly trash by **40** pounds.

- a** Nathan claims that the 6th grade was more successful. Why might he make that claim?
  
  
  
  
  
  
  
  
  
  
- b** Juliana claims that the 7th grade was more successful. Why might she make that claim?


### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **2.01**

Select *all* the true statements.


- A. The ratio of clouds to hearts is 6 to 4.
- B. The ratio of hearts to clouds is 6 to 4.
- C. For every 2 clouds, there are 3 hearts.
- D. For every 3 clouds, there are 2 hearts.
- E. The ratio of hearts to clouds is 3 : 2.



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### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **2.02**

A recipe for pizza dough begins with these instructions:

Mix 6 teaspoons of yeast for every 4 cups of flour.




Select *all* the ratios that are equivalent to the original recipe.

- A. 3 teaspoons of yeast to 2 cups of flour
- B. 7 teaspoons of yeast to 5 cups of flour
- C. 18 teaspoons of yeast to 12 cups of flour
- D. 4 teaspoons of yeast to 2 cups of flour
- E. 12 teaspoons of yeast to 10 cups of flour

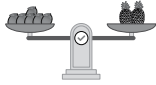
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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **2.03**

The scale balances with a ratio of 6 mangoes to 2 pineapples.




Select *all* of the combinations that will balance the scale.

- A. 3 mangoes and 1 pineapple
- B. 7 mangoes and 3 pineapples
- C. 10 mangoes and 6 pineapples
- D. 24 mangoes and 8 pineapples
- E. 60 mangoes and 20 pineapples


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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

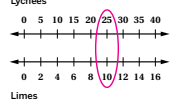
**Show What You Know**  **2.04**

This scale balances with a ratio of 5 lychees to 2 limes.



How many lychees will balance with 10 limes? Use the double number line if it helps to show your thinking.


**25 lychees**



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Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.05

Denise mixed yellow paint and blue paint together to make her favorite shade of green. The relationship between the parts of yellow and blue paint that she used is shown in the table. Complete the table. Show or explain your thinking.


Parts of Yellow Paint	1.5	4.5	18
Parts of Blue Paint	4	12	48
Mixture of New Paint	5.5	16.5	66

Responses vary. The ratio of yellow to blue paint (1.5:4) is used to find the amount of yellow for any given amount of blue. The total mixture was obtained by adding the corresponding parts of yellow and blue paint.

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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.06

What is the least common multiple of 10 and 6?


30

1 2 3 4 5 6 7 8 9 10  
 11 12 13 14 15 16 17 18 19 20  
 21 22 23 24 25 26 27 28 29 30  
 31 32 33 34 35 36 37 38 39 40  
 41 42 43 44 45 46 47 48 49 50  
 51 52 53 54 55 56 57 58 59 60  
 61 62 63 64 65 66 67 68 69 70  
 71 72 73 74 75 76 77 78 79 80  
 81 82 83 84 85 86 87 88 89 90  
 91 92 93 94 95 96 97 98 99 100

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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.07

What is the greatest common factor of 24 and 40?


Sketch a diagram if it helps with your thinking.

8

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Show What You Know Lesson 8

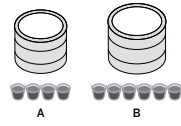
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.08

Here are two new ratios of red tint to white paint:

**Ratio A:** 4 ounces red : 3 gallons white

**Ratio B:** 6 ounces red : 4 gallons white



Which ratio will make a darker red? Circle one.

Ratio A Ratio B They'll make the same red

Explain your thinking.


Explanations vary.

- Ratio B has 1.5 ounces of red for each gallon of white, and Ratio A has about 1.33 ounces of red for each gallon of white. More red tint means a darker red.
- If you multiply both ratios so they each have 12 ounces of red, Ratio A uses  $3 \cdot 3 = 9$  gallons of white paint, while Ratio B only uses  $4 \cdot 2 = 8$  gallons of white. Less white paint means a darker red.

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Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.09

Your community recommends 12 rolls of duct tape and 4 pairs of scissors for every, in the event of a disaster.


Complete the table according to your community's recommendations.

Population	Rolls of Duct Tape	Pairs of Scissors
100	12	4
300	36	12
4,000	480	160
50	6	2

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Show What You Know Lesson 10

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

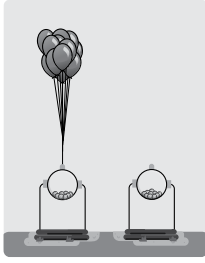
**Show What You Know**  2.10

Red balloons float orange marbles at a ratio of 12 : 8.

How many red balloons will float 10 orange marbles?

Show or explain your thinking.


15 red balloons. Responses vary. I divided 12 by 8 to determine the number of balloons it would take to float one orange marble:  $\frac{12}{8} = 1.5$ . Then, I multiplied 1.5 and 10 to get 15, the number of balloons needed to float 10 orange marbles.



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Show What You Know Lesson 11

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.11

Here are two problems.

**Problem A**

Anya earns \$75 in 5 hours. How much money will she earn if she works 40 hours?

**Problem B**

Irene has \$10 more than Emiliano. Emiliano has \$12. How much does Irene have?

a Which problem could you use equivalent ratios to solve? Explain your thinking.

Problem A. Explanations vary. I could use equivalent ratios to solve Problem A since Anya will earn the same amount every hour.


b Answer the problem you chose.

\$600.

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Show What You Know Lesson 12

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  2.12

6th grade and 7th grade students at a school are trying to reduce how much trash they create.

There are 140 students in 6th grade. Together, they reduced their weekly trash by 42 pounds.

There are 100 students in 7th grade. Together, they reduced their weekly trash by 40 pounds.

a Nathan claims that the 6th grade was more successful. Why might he make that claim?

Responses vary. Nathan might claim that the 6th grade was more successful because they reduced the most amount of trash overall.

b Juliana claims that the 7th grade was more successful. Why might she make that claim?

Responses vary. Juliana might claim that the 7th grade was more successful because those students reduced more trash per person.

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# Unit 3

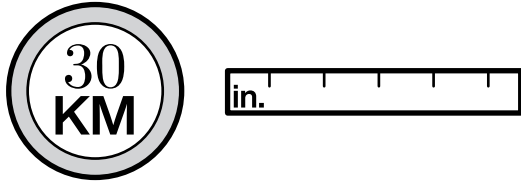
## **Assessments and Rubrics**



# Pre-Unit Check

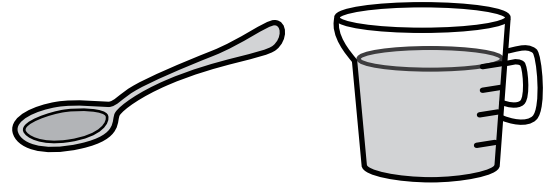
## Unit 3

1. a Kilometers and inches are two units used to measure *length*.



List two other units used to measure length.

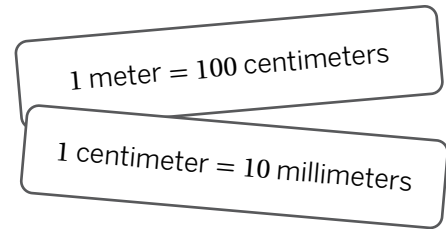
- b Tablespoons and liters are two units used to measure *volume*.



List two other units used to measure volume.

2. Select *all* of the true statements.

- A. 2 meters = 200 centimeters
- B. 5 millimeters = 50 centimeters
- C. 300 meters = 3 centimeters
- D. 4 centimeters = 400 meters
- E. 30 millimeters = 3 centimeters



3. Select *all* of the numbers that have the same value as  $7 \times \frac{5}{4}$ .

- A. 8.3
- B.  $\frac{35}{4}$
- C.  $8\frac{3}{4}$
- D.  $\frac{35}{28}$
- E. 8.75

**Pre-Unit Check (continued)****Unit 3**

4. A bakery charges \$3 for 8 cookies.

- a How many cookies can you buy with \$15?
- b Dylan says that 10 cookies would cost \$3.50. Is Dylan correct? Circle one.
- Yes                      No

5. List anything you know about percentages.

50% off

6. Complete each sentence or equation with a number that makes it true.

- a  $\frac{1}{4}$  of 24 is .....
- b  $\frac{3}{4}$  of 44 is .....
- c  $\frac{1}{10}$  of 300 is .....
- d  $\frac{1}{10}$  of 340 is .....
- e  $\frac{1}{10} \times 300 = \dots\dots\dots$
- f  $\frac{1}{100} \times 340 = \dots\dots\dots$
- g  $\frac{3}{100} \times 340 = \dots\dots\dots$

7. Select *all* of the expressions that have the same value.

- A.  $\frac{1}{100} \times 400$                        B.  $\frac{1}{10} \times 400$                        C.  $400 \times 0.01$
- D.  $\frac{400}{100}$                                    E.  $\frac{1}{400} \times 100$

# Sub-Unit Quiz

## Unit 3

1. Three trains leave a station and travel toward their destinations.

- Train A travels 45 meters in 1 second.
- Train B travels 150 meters in 3 seconds.
- Train C travels 64 meters in 2 seconds.

Order the trains by speed.

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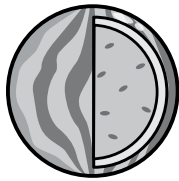
**Slowest**

**Fastest**

2. Which object weighs more? Circle one.

**Watermelon**

**Pumpkin**



264 ounces



12 pounds

Show or explain your thinking.

3. A grocery store charges \$6.95 for a large 5-pound bag of grapes.

- a What is the cost per pound of the grapes?
- b The grocery store charges \$2.90 for a small 2-pound bag of grapes.

Which size is the better deal? Circle one.

Large 5-pound

Small 2-pound

Explain your thinking.

**Sub-Unit Quiz (continued)**


**Unit 3**


- 4.** A strawberry milk recipe uses 3 teaspoons of strawberry syrup for every 8 ounces of milk.
- a** How many teaspoons of strawberry syrup per ounce of milk does this recipe use?
  - b** How many ounces of milk are needed per teaspoon of strawberry syrup?
  - c** There are 18 ounces of milk left in a container. How many teaspoons of strawberry syrup would you need if you used all the milk? Show or explain your thinking.


- 5.** Duri bought 4 gallons of gas for \$10.
- a** Complete the table for buying gas at this rate.


Gas (gallons)	Price (dollars)
4	10
5	
	37.50

- b** Write a question you could answer using this table that would give you new information about this situation.
- c** Answer the question you wrote.

 Standard	MA.6.AR.3.2	MA.6.AR.3.3	MA.6.AR.3.5	MA.7.AR.3.2
Problem(s)	1, 3a, 4a, 4b	4a, 4b	2, 3b, 4c, 5a, 5b, 5c	4c, 5a, 5b, 5c

Problem 1		 Standard: MA.6.AR.3.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>From slowest to fastest:</b></p> <ul style="list-style-type: none"> <li>• Train C</li> <li>• Train A</li> <li>• Train B</li> </ul>		<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response correctly identifies the slowest or fastest train.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Response identifies Train A as the slowest or orders the meters from least to greatest.</p>

Problem 2		 Standards: MA.6.AR.3.5, MTR.4.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Watermelon.</b></p> <p><b>Explanations vary.</b></p> <p><b>There are 16 ounces in a pound so 264 ounces divided by 16 is equal to 16.5 pounds. Therefore, the watermelon weighs more than the pumpkin.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write that the watermelon weighs 3.4 pounds or that the pumpkin weighs 26.4 kilograms may have switched the quantities in the conversion rate.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 3a		 Standard: MA.6.AR.3.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>\$1.39 per pound</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$0.72 may have calculated <math>\frac{5}{6.95}</math>.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 3b			
Standards: MA.6.AR.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Large 5-pound. Explanations vary. The large 5-pound bag costs \$1.39 per pound and the small 2-pound bag costs \$1.45 per pound, so the large bag gets more grapes per dollar.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>E.g., Response calculates the cost per pound of each bag of grapes and reasons that the small bag gets more pounds per dollar because its cost per pound is higher than the large bag.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., Response states that the large bag costs less per pound but does not include a unit rate for the small bag.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4a			
Standards: MA.6.AR. 3.2, MA.6.AR. 3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b><math>\frac{3}{8}</math> teaspoons (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{8}{3}</math> may have reversed the order of the ratio.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b			
Standards: MA.6.AR. 3.2, MA.6.AR. 3.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b><math>\frac{8}{3}</math> ounces (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{3}{8}</math> may have reversed the order of the ratio.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4c			
Standards: MA.6.AR.3.5, MA.7.AR.3.2, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>6.75 teaspoons.</b>  <i>Explanations vary. The recipe uses <math>\frac{3}{8}</math> teaspoons per ounce of milk, so you need <math>\frac{3}{8} \cdot 18 = \frac{54}{8}</math> or 6.75 teaspoons.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write “48 teaspoons” may have multiplied 18 by <math>\frac{8}{3}</math>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p> <p>Students who write “13 teaspoons” may think 10 more ounces of milk will need 10 more teaspoons of syrup.</p>

Problem 5a											
Standards: MA.6.AR.3.5, MA.7.AR.3.2											
4 Meeting	3 Approaching	2 Developing	1 Beginning								
<p><b>Correct</b> response:</p> <table border="1" style="border-style: dashed; border-color: gray;"> <thead> <tr> <th>Gas (gallons)</th> <th>Price (dollars)</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>10</td> </tr> <tr> <td>5</td> <td><b>12.50</b></td> </tr> <tr> <td><b>15</b></td> <td>37.50</td> </tr> </tbody> </table>	Gas (gallons)	Price (dollars)	4	10	5	<b>12.50</b>	<b>15</b>	37.50	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding.</b></p> <p>E.g., Response uses addition instead of multiplication as the relationship between columns (e.g., Student writes 11 in Row 2).</p>
Gas (gallons)	Price (dollars)										
4	10										
5	<b>12.50</b>										
<b>15</b>	37.50										

Problem 5b			
Standards: MA.6.AR.3.5, MA.7.AR.3.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• <b>How much does 1 gallon of gas cost?</b></li> <li>• <b>How many gallons of gas can you buy with \$20?</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Question can be answered using the table, but does not reference the given context.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Question cannot be answered using the table, but does reference the given context.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 5c		Standards: MA.6.AR.3.5, MA.7.AR.3.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response based on response to 5b.</p> <p><i>Responses vary.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding.</b></p>

**End-of-Unit Assessment****Unit 3**

1. Sydney's fitness app says she has completed 70% of her biking goal for the week. Her goal is 50 miles. How far has she biked?
- A. 1.4 miles                      B. 20 miles                      C. 35 miles                      D. 71.4 miles
2. Mateo's pasta sauce recipe uses 8 tomatoes for every 3 teaspoons of oil. Select *all* of the true statements.
- A. The recipe uses  $\frac{3}{8}$  tsp of oil per tomato.
- B. The recipe uses  $\frac{3}{8}$  tomatoes per tsp of oil.
- C. Mateo needs 3 tomatoes for every 8 tsp of oil.
- D. Mateo needs  $\frac{3}{4}$  tsp of oil for every 2 tomatoes.
- E. Mateo needs 9 tomatoes for every 4 tsp of oil.
3. Eliza and David each walk at a constant speed.
- Eliza walks 704 feet in 4 minutes.
  - David walks 924 feet in 6 minutes.

Who walks faster? Circle one.

Eliza          David          They walk at the same speed

Explain your reasoning.

4. Zion is reading a 300-page book and has read 41% of the book so far. How many pages of the book has Zion read?

**End-of-Unit Assessment (continued)****Unit 3**

5. An amusement park has a ride that only allows passengers who are 5 feet tall or taller.

Fabiana is 64 inches tall. Is she tall enough to ride? Circle one.

Yes

No

Explain your thinking.

6. It took Amari 2 hours to paint the first 14 feet of a 70-foot-long fence.


- a What percent of the fence has she painted so far?
- b At this rate, how long would it take Amari to paint the entire fence?


7. Afia bought shoes that were on sale for 30% off the regular price. Afia saved \$12.

- a What was the regular price of the shoes?
- b Afia entered this expression into a calculator at the store:  $\frac{30}{100} \cdot 56$ .

Write a question Afia could answer about prices at the store using this expression.

 Standard	MA.6.AR.3.4	MA.6.AR.3.5	MA.6.NSO.3.5	MA.7.AR.3.2
Problem(s)	1, 4, 6, 7a, 7b	2, 3, 5	7b	2

Problem 1		 Standard: MA.6.AR.3.4	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>35 miles</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 1.4 miles may have calculated <math>\frac{70}{50}</math>.</p> <p>Students who select 20 miles may have calculated <math>70 - 50</math>.</p> <p>Students who select 71.4 miles may have calculated <math>\frac{50}{70} \cdot 100</math>.</p>

Problem 2		 Standards: MA.6.AR.3.5, MA.7.AR.3.2, MTR.3.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>The recipe uses <math>\frac{3}{8}</math> teaspoons of oil per tomato.</li> <li>Mateo needs <math>\frac{3}{4}</math> teaspoons of oil for every 2 tomatoes.</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 3			
Standards: MA.6.AR.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Eliza. Explanations vary. Eliza walks <math>\frac{704}{4} = 176</math> feet per minute, and David walks <math>\frac{924}{6} = 154</math> feet per minute.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4			
Standard: MA.6.AR.3.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>123 pages</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “121 pages” may have calculated 40% of 300 and then added 1.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write “13.6 pages” may have calculated <math>\frac{41}{300} \cdot 100</math>.</p>

Problem 5			
Standards: MA.6.AR.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Yes. Explanations vary. There are 12 inches in one foot. Since <math>5 \times 12 = 60</math>. Since Fabina is 64 inches tall, she can ride adult rides.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p>E.g., Response identifies that Fabiana is tall enough but includes a calculation error.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.AR.3.4, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>20%</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 0.2% may have calculated <math>\frac{14}{70}</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 14.3% may have calculated <math>\frac{2}{14} \cdot 100</math>.</p> <p>Students who write 2.9% may have calculated <math>\frac{2}{70} \cdot 100</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b			
Standards: MA.6.AR.3.4, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>10 hours</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "5 hours" may have calculated <math>\frac{70}{14}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "35 hours" may have calculated <math>\frac{70}{2}</math>.</p>

Problem 7a			
Standard: MA.6.AR.3.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: <b>\$40</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$3.60 may have used \$12 as the regular price and calculated the savings.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$8.40 may have used \$12 as the regular price and calculated 70% of the price.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write \$2.50 may have calculated <math>\frac{30}{12}</math>.</p>

Problem 7b		Standards: MA.6.AR.3.4, MA.6.NSO.3.5	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• How many dollars will you save on a \$56 item that is 30% off?</li> <li>• How many dollars will you save on a \$30 item that is 56% off?</li> <li>• How much does a \$56 item cost that is discounted 70%?</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Question can be answered using the expression, but does not reference the given context.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Question cannot be answered using the expression, but does reference the given context.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Question includes the numbers 30 and 56 but does not describe how they are related.</p>

**End-of-Unit Assessment****Unit 3**

1. Oscar set a goal of doing 50 push-ups each week. He has completed 40% of his goal for the week. How many push-ups has he done?

- A. 80 push-ups      B. 20 push-ups      C. 10 push-ups      D. 125 push-ups

2. Elena's salad dressing recipe calls for 4 tbsp of oil for every 3 tbsp of vinegar. Select *all* of the true statements.

- A. She needs 2 tbsp of oil for every  $\frac{3}{2}$  tbsp of vinegar.
- B. She needs 3 tbsp of oil for every 4 tbsp of vinegar.
- C. She needs 5 tbsp of oil for every 4 tbsp of vinegar.
- D. The recipe uses  $\frac{3}{4}$  tbsp of oil per 1 tbsp of vinegar.
- E. The recipe uses  $\frac{3}{4}$  tbsp of vinegar per 1 tbsp of oil.

3. Vihaan and Natalia each walk at a constant speed.

- Vihaan walks 40 feet in 10 seconds.
- Natalia walks 23 feet in 4 seconds.

Who walks faster? Circle one.

Vihaan      Natalia      They walk at the same speed

Explain your reasoning.

4. Terrance's family set a goal of doing 400 hours of volunteer work. They have done 35% of their volunteer work.

How many hours have they worked so far?

**End-of-Unit Assessment** (continued)**Unit 3**

5. A store sells pajamas in two sizes.
- The child size is for people less than 60 inches tall.
  - The adult size is for people 60 inches tall or taller.

Juan is 4 feet 8 inches tall. Does he fit the child or adult size? Circle one.

Child

Adult

Explain your thinking.

6. Xavier is chopping 60 brussels sprouts for dinner. It took 3 minutes to chop the first 15.
- a What percent of the brussels sprouts has he chopped so far?
  - b At this rate, how long would it take Xavier to chop all 60 brussels sprouts?
7. Bao bought a jacket that was on sale for 20% off the regular price. Bao saved \$14.
- a What was the regular price of the jacket?
  - b Bao entered this expression into a calculator at the store:  $\frac{20}{100} \cdot 64$ .

Write a question he could answer about prices at the store using this expression.

Standard	MA.6.AR.3.4	MA.6.AR.3.5	MA.6.NSO.3.5	MA.7.AR.3.2
Problem(s)	1, 4, 6, 7a, 7b	2, 3, 5	7b	2

Problem 1		Standard: MA.6.AR.3.4	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p>20 push-ups</p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 10 push-ups may have calculated <math>50 - 40</math>.</p> <p>Students who select 125 push-ups may have calculated <math>\frac{50}{40} \cdot 100</math>.</p>

Problem 2		Standards: MA.6.AR.3.5, MA.7.AR.3.2, MTR.3.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>She needs 2 tbsp of oil for every <math>\frac{3}{2}</math> tbsp of vinegar.</li> <li>The recipe uses <math>\frac{3}{4}</math> tbsp of vinegar per 1 tbsp of oil.</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 3			
Standards: MA.6.AR.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Natalia. Explanations vary. Vihaan walks <math>\frac{40}{10} = 4</math> feet per second, and Natalia walks <math>\frac{23}{4} = 5.75</math> feet per second.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4			
Standard: MA.6.AR.3.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>140 hours</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "8.75 hours" may have calculated <math>\frac{35}{400} \cdot 100</math>.</p>

Problem 5			
Standards: MA.6.AR.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Size 1. Explanations vary. There are 12 inches in a foot. Adult size pajamas are for people that are 60 inches or taller. Juan's height is 4 feet and 8 inches. I can find Juan's height in inches: <math>4 \times 12 = 48</math>. And <math>48 + 8 = 56</math>. Since Juan is 56 inches tall, he would fit the child size.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p>E.g., Response identifies that Juan would wear the child size but includes a calculation error.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.AR.3.4, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>25%</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 0.25% may have calculated <math>\frac{15}{60}</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 20% may have calculated <math>\frac{3}{15} \cdot 100</math>.</p> <p>Students who write 5% may have calculated <math>\frac{3}{60} \cdot 100</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b			
Standards: MA.6.AR.3.4, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>12 minutes</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "4 minutes" may have calculated <math>\frac{60}{15}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "20 minutes" may have calculated <math>\frac{60}{3}</math>.</p>

Problem 7a			
Standard: MA.6.AR.3.4			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>\$70</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$2.80 may have used \$14 as the regular price and calculated the savings.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$11.20 may have used \$14 as the regular price and calculated 80% of the price.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write \$1.43 may have calculated <math>\frac{20}{14}</math>.</p>

Problem 7b		Standards: MA.6.AR.3.4, MA.6.NSO.3.5	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• How many dollars will you save on a \$64 item that is 20% off?</li> <li>• How many dollars will you save on a \$20 item that is 64% off?</li> <li>• How much does a \$64 item cost that is discounted 80%?</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Question can be answered using the expression, but does not reference the given context.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Question cannot be answered using the expression, but does reference the given context.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Question includes the numbers 20 and 64 but does not describe how they are related.</p>

Unit 3

**Show What You  
Know PDFs**



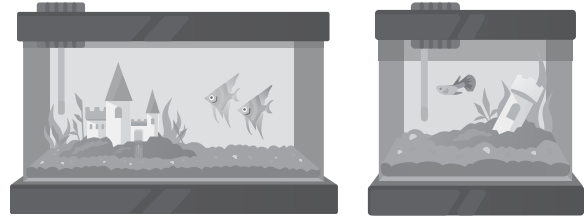
# Show What You Know



3.01

Malik and Lukas each have a fish tank. Malik's tank holds 20 gallons. Lukas's tank holds 20 cups.

- a** Label each fish tank with the name of the person it belongs to. Explain your thinking.



.....

- b** Angel's fish tank holds 20 liters of water. How does it compare to Malik's and Lukas's tanks? Draw the tank if it helps to show your thinking.

# Show What You Know

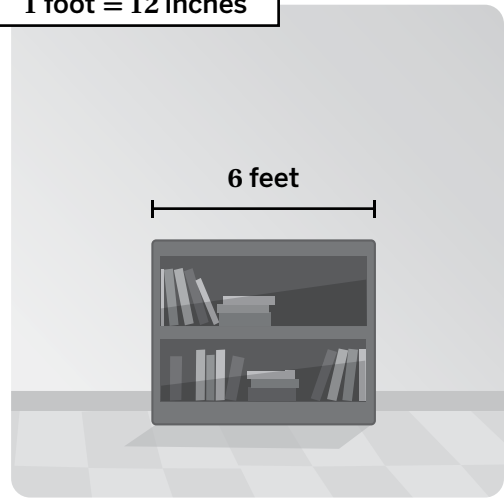


3.02

A bookshelf is 6 feet wide.

How many inches is that?

**1 foot = 12 inches**



## Show What You Know



3.03

Eva traveled 15 meters in 1 second. Kanna traveled 80 meters in 4 seconds. Who traveled faster? Circle one.

Eva

Kanna

They traveled at the same speed.

Explain your thinking.

# Show What You Know



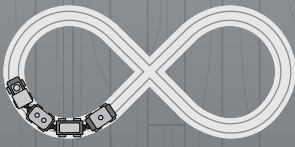
3.04

Which train is faster? Circle one.

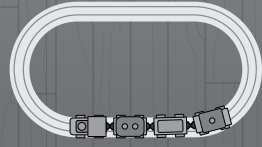
Train A      Train B      Not enough information

Explain your thinking. If you don't have enough information, what information would help you determine which train travels faster?

Train A:  
300 centimeters in 20 seconds



Train B:  
2 meters in 15 seconds



## Show What You Know



3.05

Two pounds of grapes cost \$5.

- Jordan says that's 2.5 pounds per dollar.
- Emika says it's 0.4 pounds per dollar.

Which rate is correct? Circle one.

2.5 pounds      0.4 pounds      Neither  
per dollar      per dollar

Explain your thinking.



# Show What You Know



3.06

A factory can make 4 robots in 120 seconds.

Complete the table.

Number of Robots	Time (sec)
4	120
25	
	270
1	

# Show What You Know




3.07

Here are some new orders for Shop A.

Complete the table.

Weight (oz)	Cost (dollars)
9	3.60
4.5	
	2.88

**Shop A**  
 5 oz for \$2.00  
 \$0.40 per oz  
 2.5 oz per dollar



4.50 oz	_____ oz
\$ _____	\$2.88

# Show What You Know

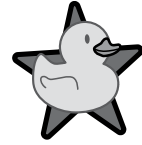


3.08

Which game has more duckies with stars?

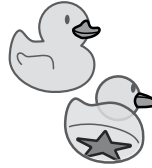
Ducky Draw   Star Selector   They are the same

Explain your thinking.



**Ducky Draw**

**50 duckies!**  
**10% have stars!**



**Star Selector**

**10 duckies!**  
**50% have stars!**

## Show What You Know

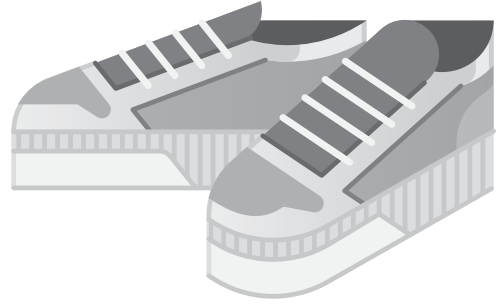


3.09

Callen bought new sneakers for \$60.

Miko bought sneakers that cost 80% of that price.

Show or explain your thinking.



## Show What You Know



3.10

It takes Emiliano 20 minutes to walk 80% of the way to school.

How long does it take in total for Emiliano to walk to school?

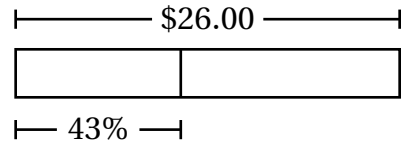
Show or explain your thinking.

**Show What You Know****3.11**

A store is having a sale on short-sleeve t-shirts.  
Select *all* the expressions that can be used to calculate  
43% of \$26.



- A.  $\frac{26}{100}$
- B.  $\frac{26}{100} \cdot 43$
- C.  $\frac{26}{43} \cdot 100$
- D.  $\frac{43}{100} \cdot 26$
- E.  $\frac{100}{43} \cdot 26$









### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.01**

Malik and Lukas each have a fish tank. Malik's tank holds 20 gallons. Lukas's tank holds 20 cups.

a Label each fish tank with the name of the person it belongs to. Explain your thinking.  
*Explanations vary. The smaller tank is Lukas's and the larger tank is Malik's because cups are smaller than gallons.*




Malik Lukas

b Ange's fish tank holds 20 liters of water. How does it compare to Malik's and Lukas's tanks? Draw the tank if it helps to show your thinking.  
*Responses vary. 1 liter is larger than 1 cup and smaller than 1 gallon. This means Ange's fish tank is larger than Lukas's and smaller than Malik's.*

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### Show What You Know Lesson 2

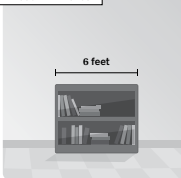
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.02**

A bookshelf is 6 feet wide.

How many inches is that?  
**72 inches**


1 foot = 12 inches



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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.03**

Eva traveled 15 meters in 1 second. Kanna traveled 80 meters in 4 seconds. Who traveled faster? Circle one.


Eva **Kanna** They traveled at the same speed.

Explain your thinking.  
*Explanations vary. Kanna traveled 20 meters per second because  $80 \div 4 = 20$ . Eva only traveled 15 meters per second, which means Kanna traveled faster.*

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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.04**

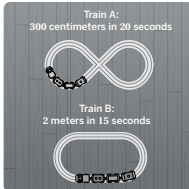
Which train is faster? Circle one.

**Train A** Train B Not enough information

Explain your thinking. If you don't have enough information, what information would help you determine which train travels faster?

*Explanations vary.*

- Train A travels  $\frac{300}{20} = 15$  centimeters per second, while Train B only travels  $\frac{200}{15} = 13\frac{1}{3}$  centimeters per second.
- Train A travels  $300 \div 3 = 900$  centimeters in one minute and Train B travels  $200 \div 4 = 800$  centimeters in one minute. Train A is faster because it travels farther in one minute.




Train A: 300 centimeters in 20 seconds

Train B: 2 meters in 15 seconds

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Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.05**


Two pounds of grapes cost \$5.

- Jordan says that's 2.5 pounds per dollar.
- Emika says it's 0.4 pounds per dollar.

Which rate is correct? Circle one.

2.5 pounds per dollar    **0.4 pounds per dollar**    Neither


Explain your thinking.  
*Explanations vary. Pounds per dollar means how many pounds for 1 dollar. Since 2 pounds cost \$5, dividing both numbers by 5 will give me the number of pounds for 1 dollar:  $\frac{2}{5} = 0.4$ .*



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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.06**

A factory can make 4 robots in 120 seconds.


Complete the table.

Number of Robots	Time (sec)
4	120
25	750
9	270
1	30

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Show What You Know Lesson 7

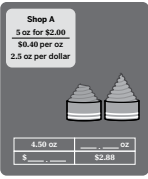
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.07**

Here are some new orders for Shop A.

Complete the table.


Weight (oz)	Cost (dollars)
9	3.60
4.5	1.80
7.2	2.88



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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.08**

Which game has more duckies with stars?

Ducky Draw    Star Selector    **They are the same**

Explain your thinking.  
*Explanations vary. 10% of 50 is 5, and 50% of 10 is also 5.*


**Ducky Draw**  
50 duckies!  
10% have stars!

**Star Selector**  
10 duckies!  
50% have stars!

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Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.09**

Callen bought new sneakers for \$60.

Miko bought sneakers that cost 80% of that price.




Show or explain your thinking.

**\$48. Responses vary.** I created a tape diagram with dollars on the top and percentage on the bottom. I lined up the 0's on each line and the 60 and 100 on each line. Then, since I was trying to determine 80% of 60, I counted by  $\frac{20}{100}$ , which is 20, on the percent line and  $\frac{40}{100}$ , which is 40, on the dollars number line so I would get the same number of values will line up. The 80% lined up under \$48, so 80% of \$60 is \$48.

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Show What You Know Lesson 10

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.10**

It takes Emiliano 20 minutes to walk 80% of the way to school.

How long does it take in total for Emiliano to walk to school?


Show or explain your thinking.

**25 minutes. Responses vary.** I created a table of Time(min) and Percentage. In the first row, I wrote 20 under time and 80 under percentage. I divided them both by 4 to get 5 minutes and 20%. Then, to get 100%, I multiplied them both by 5 to get 25 minutes and 100%.


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Show What You Know Lesson 11

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.11**

A store is having a sale on short-sleeve t-shirts. Select all the expressions that can be used to calculate 43% of \$26.



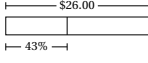
A.  $\frac{26}{100}$

B.  $\frac{26}{100} \cdot 43$

C.  $\frac{26}{43} \cdot 100$

D.  $\frac{43}{100} \cdot 26$


E.  $\frac{100}{43} \cdot 26$



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Show What You Know Lesson 12

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_


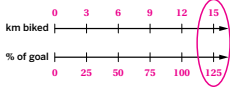
**Show What You Know**  **3.12**

Darryl rode 15 kilometers of his 12-kilometer goal.

What percent of his goal did he ride?

Use the double number line to show your thinking.


**125%**

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Show What You Know Lesson 13

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **3.13**

a. What percentage of people in the world do not have electricity?  
**About 12.7%**

b. If the world were a village of 100 people, how many of the people would not have electricity?  
**12 or 13 people**

*There are about 7.9 billion people in the world.*

*About 1 billion people in the world do not have electricity.*

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# Unit 4

## **Assessments and Rubrics**



# Pre-Unit Check

## Unit 4

1. What is the value of:

a  $1\frac{1}{2} \cdot 2\frac{1}{4}$ ?

b  $2\frac{5}{8} \cdot 3\frac{2}{3}$ ?

2. If 6 flowers fill  $\frac{1}{3}$  of this planter, how many flowers will fill the entire planter?



3. What is the value of:

a  $16 \div 2$ ?

b  $7 \div 2$ ?

c  $\frac{1}{2} \div 3$ ?

4. a Select *all* the choices that have the same value as  $20 \div 5$ .

A.  $\frac{20}{5}$

B.  $\frac{5}{20}$

C. 4

D.  $\frac{1}{4}$

E.  $5 \div 20$

b Select *all* the fractions that are equivalent to  $\frac{10}{4}$ .

A.  $10\frac{1}{4}$

B.  $\frac{5}{2}$

C.  $2\frac{1}{2}$

D.  $\frac{20}{8}$

E.  $\frac{8}{2}$

**Pre-Unit Check (continued)**

**Unit 4**

5. The tape diagrams on the left show that  $\frac{1}{4}$  and  $\frac{3}{8}$  are *not* equivalent fractions. Use the empty tape diagrams to draw two fractions that *are* equivalent.

$$\frac{1}{4}$$



$$\frac{3}{8}$$



6. What is the value of:

a  $9 \cdot \frac{1}{2}$ ?

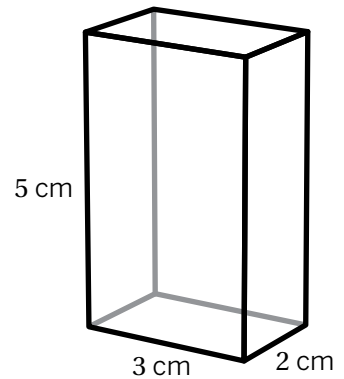
b  $\frac{1}{2} \cdot \frac{3}{4}$ ?

### Pre-Unit Check (continued)

**Unit 4**

7. **a** Which of these best describes the volume of a box?
- A. The number of faces the box has.
  - B. The number of cubes that fit in the box.
  - C. The amount of paint needed to cover the box.
  - D. The weight of the box.

- b** What is the volume of this rectangular prism?



- c** Nekeisha says that calculating the volume of this rectangular prism is the same as calculating the volume of five  $1 \times 3 \times 2$ -centimeter prisms added together.

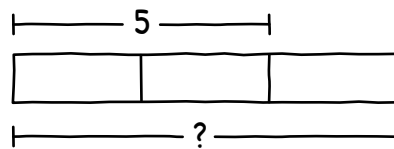
Is this true? Circle one.

True            False            Not enough information

Explain your thinking.

**Sub-Unit Quiz****Unit 4**

1. Select *all* the representations that match this tape diagram.



- A.  $5 \div \frac{2}{3} = ?$
- B.  $? \div \frac{2}{3} = 5$
- C.  $5 \div 3 = ?$
- D.  $\frac{2}{3} \cdot ? = 5$
- E.  $3 \cdot ? = 5$
2. Select *all* the expressions with a quotient that is greater than 1.
- A.  $2 \div \frac{3}{4}$
- B.  $\frac{3}{4} \div 2$
- C.  $\frac{3}{4} \div \frac{1}{2}$
- D.  $\frac{1}{4} \div \frac{3}{2}$
- E.  $\frac{3}{2} \div 4$
3. Determine the value of each expression.

**a**  $\frac{2}{5} \div 4$

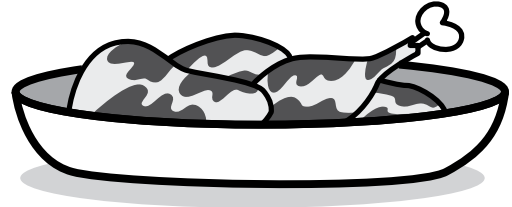
**b**  $1\frac{1}{2} \div \frac{3}{8}$

**c**  $\frac{3}{4} \div \frac{1}{3}$

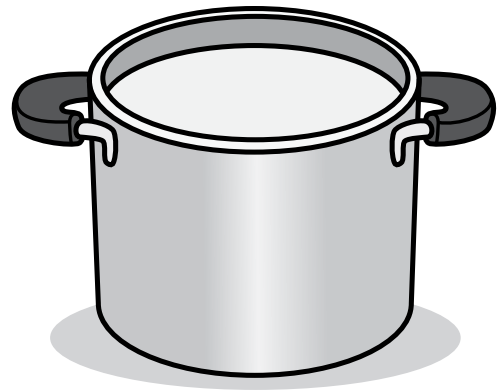
**Sub-Unit Quiz (continued)**

**Unit 4**


4. a Sai wants to make barbecue chicken.  
 Each serving uses  $\frac{2}{3}$  of a pound of chicken.  
 Sai has  $4\frac{1}{3}$  pounds of chicken.  
 How many servings can Sai make if he uses all the chicken?





- b Sai wants to make a large pot of soup.  
 $\frac{3}{5}$  of the pot will fill 15 bowls.  
 How many bowls will 1 pot of soup fill?




5. a Describe a situation that could be represented by the expression  $5 \div \frac{3}{4}$ .
- b Determine the value of  $5 \div \frac{3}{4}$  and explain what it means in your situation.

 <b>Standard</b>	MA.6.NSO.2.2	MA.6.NSO.2.3
<b>Problem(s)</b>	1, 2, 3	4, 5

<b>Problem 1</b>		 <b>Standard: MA.6.NSO.2.2</b>	
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>5 \div \frac{2}{3} = ?</math></li> <li>• <math>\frac{2}{3} \cdot ? = 5</math></li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

<b>Problem 2</b>		 <b>Standards: MA.6.NSO.2.2, MTR.5.1</b>	
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>2 \div \frac{3}{4}</math></li> <li>• <math>\frac{3}{4} \div \frac{1}{2}</math></li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

<b>Problem 3a</b>		 <b>Standard: MA.6.NSO.2.2</b>	
<b>4 Meeting</b>	<b>3 Approaching</b>	<b>2 Developing</b>	<b>1 Beginning</b>
<p><b>Correct</b> response:</p> <p><math>\frac{1}{10}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{8}{5}</math> may have multiplied instead of dividing.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b			
Standard: MA.6.NSO.2.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>4</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>1\frac{1}{3}</math> may have calculated <math>\frac{1}{2} \div \frac{3}{8}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3c			
Standard: MA.6.NSO.2.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b><math>\frac{9}{4}</math> (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{4}</math> may have multiplied instead of dividing.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4a			
Standards: MA.6.NSO.2.3, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b><math>6\frac{1}{2}</math> servings (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write <math>\frac{2}{13}</math> may have calculated <math>\frac{2}{3} \div 4\frac{1}{3}</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>2\frac{8}{9}</math> may have calculated <math>\frac{2}{3}</math> of <math>4\frac{1}{3}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b			
Standards: MA.6.NSO.2.3, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>25 bowls</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "<math>\frac{1}{25}</math> bowls" may have calculated <math>\frac{3}{5} \div 15</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "9 bowls" may have multiplied 15 by <math>\frac{3}{5}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5a			
Standards: MA.6.NSO.2.3, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>Responses vary.</b></p> <ul style="list-style-type: none"> <li>• Cameron uses a <math>\frac{3}{4}</math>-cup scoop to feed the dog. How many scoops of dog food can he get out of a 5-cup bag?</li> <li>• I've walked for 5 minutes and I'm <math>\frac{3}{4}</math> of the distance to school. How long will my whole walk take?</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response describes a situation that could be represented by <math>\frac{3}{4} \div 5</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response describes a situation that could be represented by <math>5 \cdot \frac{3}{4}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b			
Standards: MA.6.NSO.2.3, MTR.6.1, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b><math>6\frac{2}{3}</math>. Explanations vary.</b></p> <ul style="list-style-type: none"> <li>• <math>6\frac{2}{3}</math> is the number of scoops of dog food in the bag.</li> <li>• My whole walk to school will take <math>6\frac{2}{3}</math> minutes.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>E.g., Response correctly identifies what the quotient means in context.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., Response correctly calculates the quotient but does not explain what the value means in the student's situation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

**Unit 4**

1. The value of  $8 \div \frac{1}{12}$  is:

A. Less than 1.

B. Greater than 1.

C. Equal to 1.

2. Select *all* the expressions with a value that is equivalent to  $\frac{5}{8} \div \frac{3}{4}$ .

A.  $\frac{5}{8} \div \frac{6}{8}$

B.  $\frac{5}{24} \div \frac{1}{4}$

C.  $\frac{8}{5} \cdot \frac{3}{4}$

D.  $\frac{5}{8} \cdot \frac{4}{3}$

E.  $\frac{5}{32} \div \frac{1}{3}$

3. Calculate:

**a**  $\frac{10}{3} \div \frac{5}{6}$

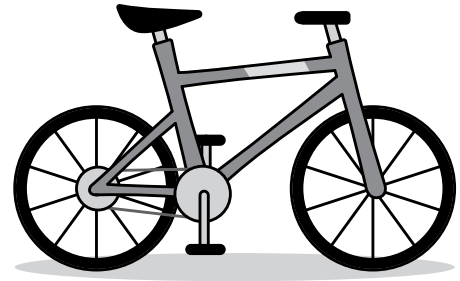
**b**  $\frac{3}{5} \div 4$

**c**  $2\frac{2}{3} \div \frac{4}{5}$

**End-of-Unit Assessment (continued)**

**Unit 4**

4. Andrea biked  $3\frac{1}{2}$  miles on Monday. On Tuesday, she biked  $5\frac{1}{4}$  miles. How many times as far did Andrea bike on Tuesday than on Monday?



5. Neo and Oliver are working together to calculate  $5 \div \frac{3}{5}$ .

Neo says that it is equal to  $8\frac{1}{3}$ . Oliver says that it is equal to  $8\frac{1}{5}$ .

Who is correct? Circle one.

Neo

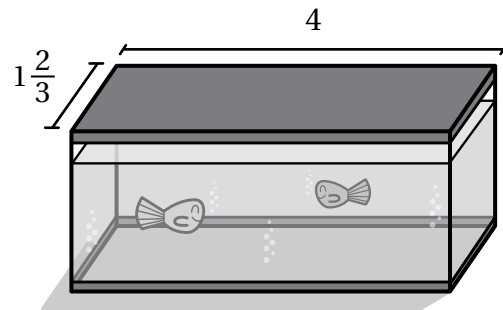
Oliver

Neither

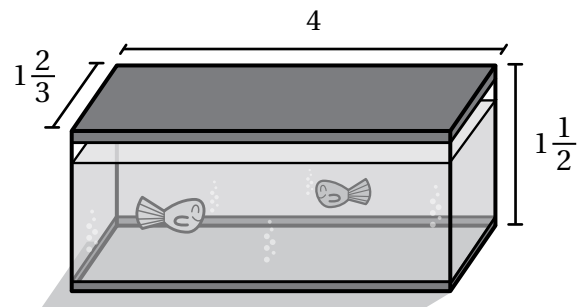
Show or explain your thinking.

6. Andrea's class is getting a new fish tank.

- a The base of the tank is a rectangle that is 4 feet by  $1\frac{2}{3}$  feet. What is the area of the base?



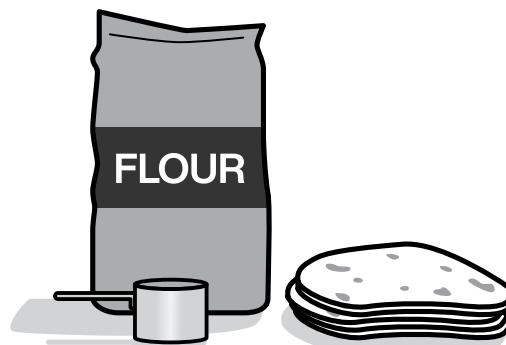
- b The height of the tank is  $1\frac{1}{2}$  feet. How many cubic feet of water can the tank hold?



**End-of-Unit Assessment** (continued)**Unit 4**

7. Amir and his grandma are making roti, an Indian bread. Amir's grandma uses a  $\frac{3}{4}$ -cup scoop. The recipe calls for  $5\frac{1}{2}$  cups of flour.
- a Write an expression *or* draw a diagram to represent how many scoops they need.

- b How many scoops of flour are needed?



- c Write a new question about Amir's grandma's  $\frac{3}{4}$ -cup scoop with an answer that is 4 scoops.

<b>Standard</b>	MA.6.NSO.2.2	MA.6.NSO.2.3
<b>Problem(s)</b>	1, 2, 3, 5	4, 6, 7

Problem 1		Standard: MA.6.NSO.2.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>Greater than 1.</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>Less than 1</i> may have reversed the order of the division.</p>

Problem 2		Standards: MA.6.NSO.2.2, MTR.5.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>All correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>\frac{5}{8} \div \frac{6}{8}</math></li> <li>• <math>\frac{5}{24} \div \frac{1}{4}</math></li> <li>• <math>\frac{5}{8} \cdot \frac{4}{3}</math></li> </ul>	<p><b>One or two correct</b> choices and <b>no incorrect</b> choices.</p> <p><b>All correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One or two correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 3a		Standard: MA.6.NSO.2.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>4</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 2 may have calculated <math>\frac{10}{6} \div \frac{5}{6}</math> or <math>\frac{10}{3} \div \frac{5}{3}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b <span style="float: right;">Standard: MA.6.NSO.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><math>\frac{3}{20}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{12}{5}</math> may have multiplied instead of dividing.</p> <p>Students who write <math>\frac{3}{4}</math> may have only divided the numerators.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3c <span style="float: right;">Standard: MA.6.NSO.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><math>\frac{10}{3}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{32}{15}</math> may have multiplied instead of dividing.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4 <span style="float: right;">Standard: MA.6.NSO.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><math>1\frac{1}{2}</math> times as far (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>1\frac{3}{4}</math> (or equivalent) may have responded to "How many more miles did Andrea bike on Tuesday?"</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5			
Standards: MA.6.NSO.2.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Neo. Explanations vary.</i></p> <ul style="list-style-type: none"> <li>• <math>\frac{25}{5} \div \frac{3}{5} = \frac{25}{3} = 8\frac{1}{3}</math></li> <li>• <math>5 = \frac{25}{5}</math>. 8 groups of <math>\frac{3}{5}</math> make <math>\frac{24}{5}</math>, with <math>\frac{1}{5}</math> of a group left over.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who select <i>Oliver</i> may have made 8 groups of <math>\frac{3}{5}</math> and noticed that there was 1 section remaining.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.NSO.2.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>6\frac{2}{3}</math> square feet (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>4\frac{2}{3}</math> may have multiplied the whole numbers and fractions separately.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b			
Standards: MA.6.NSO.2.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>10 cubic feet</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>4\frac{1}{3}</math> may have multiplied the whole numbers and fractions separately.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7a <span style="float: right;">Standards: MA.6.NSO.2.3, MTR.6.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>5\frac{1}{2} \div \frac{3}{4}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Division expression with values reversed.</p> <p>E.g., Tape diagram that shows <math>5\frac{1}{2}</math>, with each unit divided into <math>\frac{1}{4}</math>s.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b <span style="float: right;">Standards: MA.6.NSO.2.3, MTR.6.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>7\frac{1}{3}</math> scoops (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{3}{22}</math> may have reversed the order of division.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7c <span style="float: right;">Standards: MA.6.NSO.2.3, MTR.6.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary. The recipe also uses 3 cups of water. How many scoops of water are needed?</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Question has an answer of 4 but does not reference the scoop.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Question does not have an answer of 4 scoops, but does reference the given situation.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Question includes the number 4.</p>

# End-of-Unit Assessment

## Unit 4

1. The value of  $\frac{1}{2} \div 3$  is:

A. Equal to 1.

B. Less than 1.

C. Greater than 1.

2. Select *all* the expressions with a value that is equivalent to  $\frac{3}{7} \div \frac{2}{5}$ .

A.  $\frac{3}{14} \div \frac{1}{5}$

B.  $\frac{7}{3} \cdot \frac{2}{5}$

C.  $\frac{3}{7} \cdot \frac{5}{2}$

D.  $\frac{3}{35} \div \frac{1}{2}$

E.  $\frac{15}{35} \div \frac{14}{35}$

3. Calculate:

**a**  $\frac{8}{5} \div \frac{2}{10}$

**b**  $\frac{3}{10} \div 6$

**c**  $4\frac{1}{3} \div \frac{5}{2}$

**End-of-Unit Assessment (continued)**

**Unit 4**

4. Emma ran  $1\frac{1}{2}$  miles. Neel ran  $3\frac{3}{4}$  miles. How many times the length of Emma's run was Neel's run?

5. Lola and Tiam are working together to calculate  $4 \div \frac{5}{7}$ .  
 Lola says that it is equal to  $5\frac{3}{7}$ . Tiam says that it is equal to  $5\frac{3}{5}$ .  
 Who is correct? Circle one.

Lola

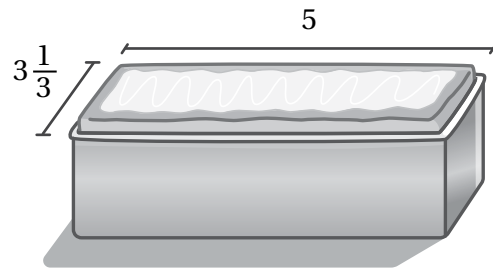
Tiam

Neither

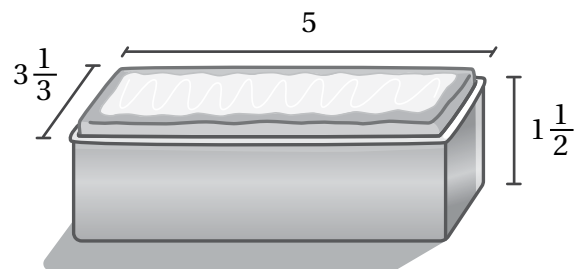
Show or explain your thinking.

6. Emma bought a new baking pan.

a The base of the pan is a rectangle that is 5 inches by  $3\frac{1}{3}$  inches. What is the area of the base?



b The height of the pan is  $1\frac{1}{2}$  inches.  
 How many cubic inches can it hold?



## End-of-Unit Assessment (continued)

## Unit 4


7. Dalia and her grandpa are making miso soup. They need  $3\frac{1}{2}$  tablespoons of miso paste, but they only have a  $\frac{2}{3}$ -tablespoon scoop.

a Write an expression or draw a diagram to represent how many scoops they need.


b How many scoops do they need?




c Write a new question about the  $\frac{2}{3}$ -tablespoon scoop with an answer that is 6 scoops.

 Standard	MA.6.NSO.2.2	MA.6.NSO.2.3
Problem(s)	1, 2, 3, 5	4, 6, 7

Problem 1  Standard: MA.6.NSO.2.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>Less than 1.</b></p>			<p><b>Incorrect choice.</b></p> <p>Students who select <i>Greater than 1</i> may have reversed the order of the division.</p>

Problem 2  Standards: MA.6.NSO.2.2, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>All correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>• <math>\frac{3}{14} \div \frac{1}{5}</math></li> <li>• <math>\frac{3}{7} \cdot \frac{5}{2}</math></li> <li>• <math>\frac{15}{35} \div \frac{14}{35}</math></li> </ul>	<p>One or two correct choices and no incorrect choices.</p> <p>All correct choices and one incorrect choice.</p>	<p>One or two correct choices and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>

Problem 3a  Standard: MA.6.NSO.2.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>8</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 4 may have calculated <math>\frac{8}{10} \div \frac{2}{10}</math> or <math>\frac{8}{5} \div \frac{2}{5}</math>.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 3b				Standard: MA.6.NSO.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>\frac{1}{20}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{18}{10}</math> may have multiplied instead of dividing.</p> <p>Students who write <math>\frac{3}{6}</math> may have only divided the numerators.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.NSO.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>\frac{26}{15}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{65}{6}</math> may have multiplied instead of dividing.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4				Standard: MA.6.NSO.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>2\frac{1}{2}</math> times as far (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>2\frac{1}{4}</math> (or equivalent) may have answered “How many more miles was Neel’s run than Emma’s run?”</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 5 <span style="float: right;">Standards: MA.6.NSO.2.2, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Tiam. Explanations vary.</b></p> <ul style="list-style-type: none"> <li>• <math>\frac{28}{7} \div \frac{5}{7} = \frac{28}{5} = 5\frac{3}{5}</math></li> <li>• <math>4 = \frac{28}{7}</math>. 5 groups of <math>\frac{5}{7}</math> make <math>\frac{25}{7}</math>, with <math>\frac{3}{5}</math> of a group left over.</li> </ul>	<p><b>Correct</b> response with minor flaws in explanation.</p> <p><b>Incorrect</b> response with logical and complete explanation.</p> <p>Students who select <i>Lola</i> may have made 5 groups of <math>\frac{5}{7}</math> and noticed that there were 3 sections remaining.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a <span style="float: right;">Standards: MA.6.NSO.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b><math>16\frac{2}{3}</math> square inches (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>15\frac{1}{3}</math> may have multiplied the whole numbers and fractions separately.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6b <span style="float: right;">Standards: MA.6.NSO.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>25 cubic inches</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>15\frac{1}{6}</math> may have multiplied the whole numbers and fractions separately.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7a			
Standards: MA.6.NSO.2.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>3\frac{1}{2} \div \frac{2}{3}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Division expression with values reversed.</p> <p>E.g., Tape diagram that shows <math>3\frac{1}{2}</math>, with each unit divided into <math>\frac{1}{3}</math>s.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b			
Standards: MA.6.NSO.2.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>5\frac{1}{4}</math> scoops (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{4}{21}</math> may have reversed the order of division.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7c			
Standards: MA.6.NSO.2.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary. The recipe also uses 4 tablespoons of water. How many scoops of water do they need?</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Question has an answer of 6 but does not reference the scoop.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Question does not have an answer of 6 scoops, but does reference the given situation.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Question includes the number 6.</p>

Unit 4

**Show What You  
Know PDFs**



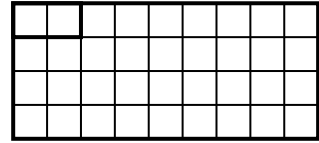
# Show What You Know



4.01

Shade the area model to show  $\frac{2}{9} \cdot \frac{1}{4}$ .

Find the product.



# Show What You Know

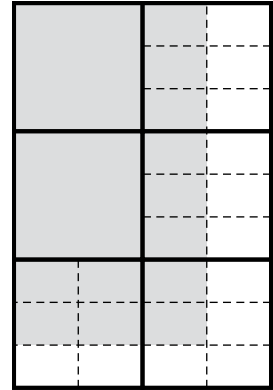


4.02

Complete the multiplication equation using the area model.

$$2\frac{2}{3} \cdot 1\frac{1}{2} = 4$$

Show or explain your thinking.



**Show What You Know****4.03**

Emmanuel needs 6 tablespoons of sugar to make lemonade. His measuring scoop is  $\frac{3}{4}$  of a tablespoon.

How many scoops will he need?

Show or explain your thinking.



## Show What You Know



4.04

6 flowers fill  $\frac{3}{5}$  of a planter.

How many flowers are in 1 planter? Show or explain your thinking. Draw a diagram if it helps with your thinking.

## Show What You Know



4.05

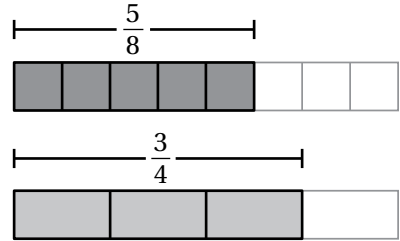
Determine the value of  $3 \div \frac{4}{5}$ . Show or explain your thinking.

# Show What You Know



4.06

What is the value of  $\frac{5}{8} \div \frac{3}{4}$ ? Show or explain your thinking.



## Show What You Know



4.07

Calculate  $\frac{2}{3} \div \frac{5}{4}$ . Show or explain your thinking. Draw a diagram if it helps with your thinking.

## Show What You Know



4.08

Calculate  $\frac{12}{5} \div \frac{1}{4}$ . Show or explain your thinking.

## Show What You Know



4.09

Calculate  $\frac{7}{2} \div \frac{3}{8}$ . Show or explain your thinking.

**Show What You Know****4.10**

Riku is evaluating the expression  $2\frac{2}{5} \div \frac{2}{9}$ .

- a** Identify the expressions that are equivalent to  $2\frac{2}{5} \div \frac{2}{9}$ . Select *all* that apply.

A.  $2\frac{2}{5} \cdot \frac{2}{9}$

B.  $2\frac{2}{5} \cdot \frac{9}{2}$

C.  $\frac{12}{5} \cdot \frac{9}{2}$

D.  $\frac{12}{5} \cdot \frac{2}{9}$

E.  $\frac{5}{12} \cdot \frac{9}{2}$

F.  $\frac{12}{5} \div \frac{2}{9}$

- b** Evaluate  $2\frac{2}{5} \div \frac{2}{9}$ . Show your thinking.

**Show What You Know****4.11**

A recipe calls for  $\frac{5}{4}$  pounds of chocolate chips. Chocolate chips come in  $\frac{2}{3}$ -pound bags. How many bags do you need?

- a** Circle the expression that represents this situation. Explain your thinking.

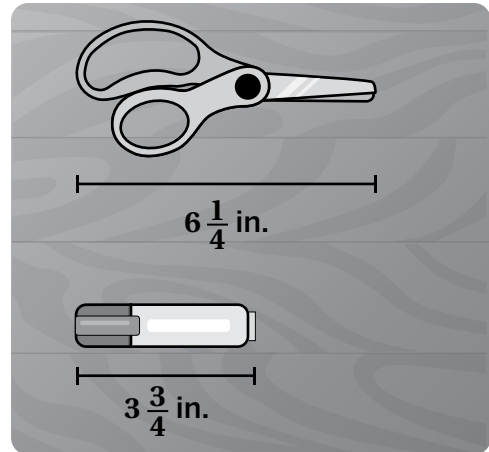
$$\frac{5}{4} \div \frac{2}{3}$$

$$\frac{2}{3} \div \frac{5}{4}$$

- b** Calculate the value of the expression you selected. Show your thinking.

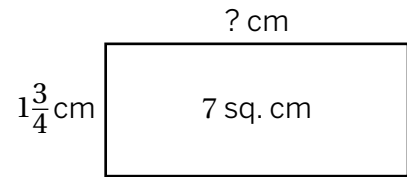
**Show What You Know****4.12**

The pair of scissors is how many times as long as the highlighter? Show your thinking.



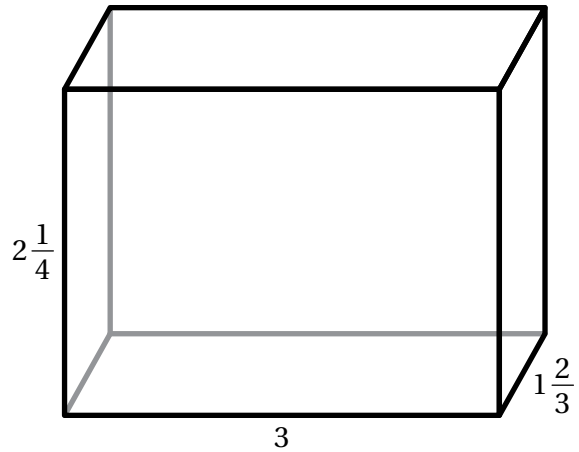
**Show What You Know****4.13**

Use any strategy to determine the missing value.  
Show or explain your thinking.



**Show What You Know****4.14**

Calculate the volume of this prism.  
Show or explain your thinking.

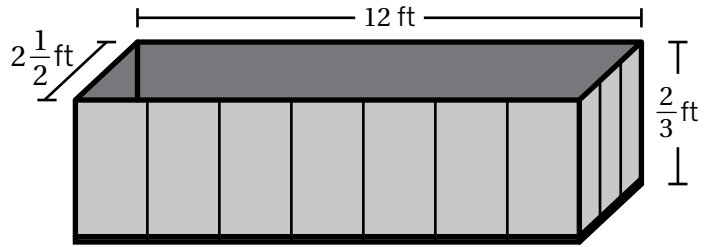


# Show What You Know




4.15

What volume of soil do you need to fill this planter? Show your thinking.



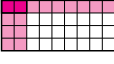
### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.01**

Shade the area model to show  $\frac{2}{3} \cdot \frac{1}{4}$ .


Find the product.  
 $\frac{2}{3}$ , or equivalent



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### Show What You Know Lesson 2

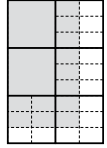
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**Show What You Know**  **4.02**

Complete the multiplication equation using the area model.

$$2\frac{2}{3} \cdot 1\frac{1}{2} = 4$$


Show or explain your thinking.  
 Responses vary.  
 The first number is  $2\frac{2}{3}$  since  $2\frac{2}{3}$  of the rows are shaded.  
 I can multiply by changing the mixed numbers to improper fractions to have  $\frac{8}{3} \cdot \frac{3}{2}$  and then multiply to have  $\frac{8}{1}$  which is 4.



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### Show What You Know Lesson 3


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.03**

Emmanuel needs 6 tablespoons of sugar to make lemonade. His measuring scoop is  $\frac{3}{4}$  of a tablespoon.

How many scoops will he need?


Show or explain your thinking.  
 8 scoops. Responses vary. I used a division equation of  $6 \div \frac{3}{4} = ?$  and changed it to the multiplication problem  $6 \times \frac{4}{3} = ?$ . Then, I made an equation  $6 \left(1 + \frac{1}{3}\right)$  and used the Distributive property to find the answer:  $6 \left(1 + \frac{1}{3}\right) = 6(1) + 6\left(\frac{1}{3}\right) = 6 + 2 = 8$ .



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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.04**


6 flowers fill  $\frac{3}{5}$  of a planter.

How many flowers are in 1 planter? Show or explain your thinking. Draw a diagram if it helps with your thinking.  
 10 flowers. Responses vary. I created a tape diagram creating 5 sections of 1 planter, where 3 of the 5 sections matched up with the 6 flowers. This would put 2 flowers in each of these sections and  $2 \times 5 = 10$  flowers in a whole planter.

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Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.05**


Determine the value of  $3 \div \frac{1}{3}$ . Show or explain your thinking.

$3 \frac{2}{3}$  (or equivalent) Explanations vary. 3 is equivalent to  $\frac{12}{4}$ . There are 3 groups of  $\frac{4}{3}$  with  $\frac{2}{3}$  left over. The leftover group has 3 of the 4 parts needed to complete the group, which means there are  $3 \frac{2}{3}$  groups of  $\frac{1}{3}$  in 3.

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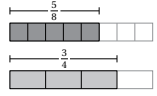
Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.06**

What is the value of  $\frac{5}{8} \div \frac{3}{4}$ ? Show or explain your thinking.


$\frac{5}{6}$  (or equivalent). Responses vary. I divided each of the  $\frac{1}{4}$  sections of the  $\frac{5}{8}$  tape diagram in half, so it was equal to  $\frac{5}{16}$ . Then, I know that  $\frac{5}{8} \div \frac{3}{4}$  would be 5 shaded boxes or  $\frac{5}{6}$ .



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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.07**

Calculate  $\frac{2}{3} \div \frac{5}{12}$ . Show or explain your thinking. Draw a diagram if it helps with your thinking.


$\frac{8}{15}$  (or equivalent)

Responses vary. I created two tape diagrams - one for  $\frac{2}{3}$  and one for  $\frac{5}{12}$ . I divided them into parts using the common denominator of 12 and shaded the equivalent parts of the original fractions. So, the  $\frac{2}{3}$  was equivalent to  $\frac{8}{12}$  and  $\frac{5}{12}$  was equivalent to  $\frac{5}{12}$ . Therefore, the solution is  $\frac{8}{15}$ .

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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **4.08**

Calculate  $\frac{12}{15} \div \frac{1}{4}$ . Show or explain your thinking.


$\frac{48}{5}$ . Responses vary. I thought of this problem as  $\frac{12}{3} \times 4$ . Then, I created a tape diagram with 4 sections. I wrote  $\frac{12}{3}$  in each of the sections and then added  $\frac{12}{3}$  four times and got  $\frac{12+12+12+12}{3}$ , which is  $\frac{48}{3}$ .



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Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  4.09

Calculate  $\frac{7}{2} \div \frac{3}{8}$ . Show or explain your thinking.

$\frac{28}{3}$  (or equivalent)

Responses vary.

I rewrote the fractions using common denominator (8) and then divided the numerator of the first fraction by the numerator of the second fraction.:

$$\frac{(7 \times 4)}{(2 \times 4)} \div \frac{3}{8}$$


$$= \frac{28}{8} \div \frac{3}{8}$$

$$= \frac{28}{3}$$

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Show What You Know Lesson 10

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  4.10

Riku is evaluating the expression  $2\frac{2}{5} \div \frac{2}{9}$ .

a Identify the expressions that are equivalent to  $2\frac{2}{5} \div \frac{2}{9}$ . Select all that apply.

A.  $2\frac{2}{5} \cdot \frac{2}{9}$   B.  $2\frac{2}{5} \cdot \frac{9}{2}$   C.  $\frac{12}{5} \cdot \frac{9}{2}$

D.  $\frac{12}{5} \cdot \frac{2}{9}$   E.  $\frac{5}{12} \cdot \frac{9}{2}$   F.  $\frac{12}{5} \cdot \frac{2}{9}$


b Evaluate  $2\frac{2}{5} \div \frac{2}{9}$ . Show your thinking.

$\frac{54}{5}$  (or equivalent)

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Show What You Know Lesson 11

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  4.11

A recipe calls for  $\frac{3}{4}$  pounds of chocolate chips. Chocolate chips come in  $\frac{2}{3}$ -pound bags. How many bags do you need?

a Circle the expression that represents this situation. Explain your thinking.

$\frac{5}{4} \div \frac{2}{3}$   $\frac{2}{3} \div \frac{5}{4}$

Explanations vary. I need to determine how many times  $\frac{2}{3}$  fits into  $\frac{3}{4}$  to know how many  $\frac{2}{3}$ -pound bags of chocolate chips I'll need for the recipe.

b Calculate the value of the expression you selected. Show your thinking.

$\frac{15}{8}$  (or equivalent). Work varies.


$$\frac{5}{4} \div \frac{2}{3} = \frac{15}{8}$$

Note: Students may write they need 2 bags of chocolate chips for the recipe since you can't buy a fractional bag of chocolate chips.

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Show What You Know Lesson 12

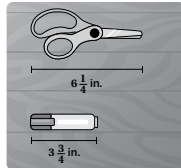
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  4.12

The pair of scissors is how many times as long as the highlighter? Show your thinking.

$\frac{25}{15}$  (or equivalent)


Responses vary.

$$6\frac{1}{4} \div 3\frac{3}{4} = \frac{25}{4} \div \frac{15}{4} = \frac{25}{15}$$


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Show What You Know Lesson 13

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

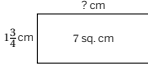
**Show What You Know**  4.13

Use any strategy to determine the missing value. Show or explain your thinking.

Methods vary. Sample response: I divided 7 by  $1\frac{3}{4}$  to determine the length of the missing side of the rectangle.

$$7 \div 1\frac{3}{4} = 7 \div \frac{7}{4} = 7 \times \frac{4}{7}$$


$$= \frac{28}{7}$$

$$= 4 \text{ cm}$$


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Show What You Know Lesson 14

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  4.14

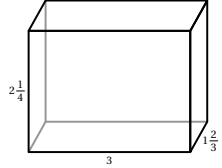
Calculate the volume of this prism. Show or explain your thinking.

$11\frac{1}{4}$  (or equivalent) cubic units

Responses vary.

$$2\frac{1}{4} \times 3 \times 1\frac{2}{3} = \frac{9}{4} \times 3 \times \frac{5}{3}$$


$$= \frac{135}{4}$$

$$= 33\frac{3}{4} \text{ cubic units}$$


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Show What You Know Lesson 15

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

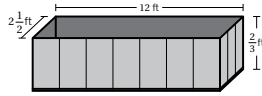
**Show What You Know**  4.15

What volume of soil do you need to fill this planter? Show your thinking.

Responses vary.

$$2\frac{1}{2} \times 12 \times \frac{2}{3} = \frac{5}{2} \times 12 \times \frac{2}{3}$$

$$= \frac{120}{6}$$

$$= 20 \text{ cubic feet}$$


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# Unit 5

## **Assessments and Rubrics**



# Pre-Unit Check

**Unit 5**

1. Select *all* the ways to describe 0.25.

- A. 25 tenths
- B. 25 hundredths
- C. 25 thousandths
- D. 2 tenths and 5 hundredths
- E. 2 hundredths and 5 thousandths

2. The number 0.9 is equivalent to  $\frac{9}{10}$ . Which of the following is equivalent to 4.9?

- A.  $\frac{4.9}{10}$
- B.  $\frac{4.9}{100}$
- C.  $\frac{49}{10}$
- D.  $\frac{49}{100}$

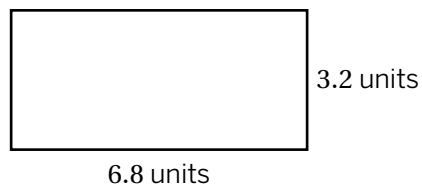
3. Here is a rectangle.

- a** What is its perimeter?

..... units

- b** What is its area?

..... square units



## Pre-Unit Check (continued)

## Unit 5

4. DeAndre saved \$254 each month for 12 months. Gabriel saved \$3,048 in total in 12 months, saving the same amount each month. Who saved more? Circle one.

DeAndre

Gabriel

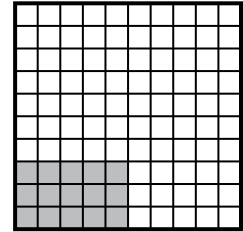
They both saved the same amount.

Explain your thinking.

# Sub-Unit Quiz 1

**Unit 5**

1. Explain how the diagram shows  $0.5 \cdot 0.3$ .

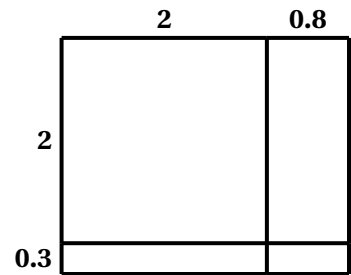


Find  $0.5 \cdot 0.3$ .

2. Determine the product of  $0.13 \cdot 0.02$ .

- A. 2.6                      B. 0.26                      C. 0.026                      D. 0.0026

3. Find the value of  $2.8 \cdot 2.3$  using the area diagram.



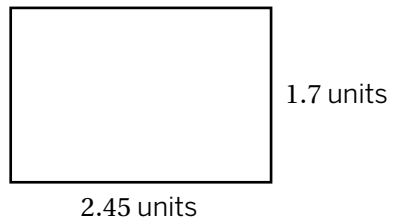
### Sub-Unit Quiz 1 (continued)

### Unit 5

4. What is the area of this rectangle?

..... square units

Show or explain your thinking.





5. Find the value of  $3.1 \cdot 5.2$  using any strategy.


6. Which expression has a value of 1.53?

- A.  $1.7 \cdot 0.9$
- B.  $0.17 \cdot 0.9$
- C.  $1.7 \cdot 0.09$
- D.  $17 \cdot 0.9$

 Standard	MA.6.NSO.2.1
Problem(s)	1, 2, 3, 4, 5, 6

Problem 1  Standard: MA.6.NSO.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct product and complete explanation.</b></p> <p><i>Responses vary. The diagram shows a rectangle that has a width of 0.5 units and a height of 0.3 units. The area equals width times height. The area of this rectangle can be found by finding <math>0.5 \cdot 0.3</math>.</i></p> <p><b>0.15 units</b></p>	<p><b>Correct product and explanation with minor errors.</b></p>	<p><b>Correct product and explanation with major errors.</b></p> <p>Students may have found the correct product but did not explain how to use the diagram correctly.</p>	<p><b>Incorrect product and explanation.</b></p>

Problem 2  Standard: MA.6.NSO.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct choice:</b></p> <p><b>0.0026</b></p>			<p><b>Incorrect choice.</b></p>

Problem 3  Standard: MA.6.NSO.2.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct product and work showing how to use the area diagram is correct.</b></p> <p><i><math>2 \cdot 2 = 4</math></i></p> <p><i><math>2 \cdot 0.8 = 1.6</math></i></p> <p><i><math>2 \cdot 0.3 = 0.6</math></i></p> <p><i><math>0.8 \cdot 0.3 = 0.24</math></i></p> <p><i><math>4 + 1.6 + 0.6 + 0.24 = 6.44</math></i></p>	<p><b>Correct product and work showing how to use the area diagram has minor errors.</b></p>	<p><b>Correct product and work showing how to use the area diagram has significant errors.</b></p> <p>Students may have added to find the areas and then multiplied the sums to find <math>2.8 \cdot 2.3</math>.</p>	<p><b>Incorrect product is shown.</b></p>

Problem 4 <span style="float: right;">Standards: MA.6.NSO.2.1, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>4.165 square units.</b>  <i>Explanations vary.</i>  <b>The area is equal to <math>1.7 \cdot 2.45</math>, which is like <math>\frac{170}{100} \cdot \frac{245}{100}</math>. This equals <math>\frac{41650}{10000}</math> or 4.165 square units.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>E.g., Response includes an attempt to calculate <math>1.7 \cdot 2.45</math>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5 <span style="float: right;">Standard: MA.6.NSO.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct product</b> and <b>correct strategy</b> shown.</p> <p><i>Work varies.</i></p> $31 \cdot 52 \cdot \frac{1}{10} \cdot \frac{1}{10} = \frac{1612}{100} = 16.12$	<p><b>Correct product</b> with minor errors in work shown.</p>	<p><b>Correct product</b> with major errors in work or no work shown.</p>	<p><b>Incorrect product</b> is shown.</p>

Problem 6 <span style="float: right;">Standard: MA.6.NSO.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct choice:</b>  <b><math>1.7 \cdot 2.45</math></b></p>			<p><b>Incorrect choice.</b></p>

**Sub-Unit Quiz 2****Unit 5**

1. Select *all* the expressions that are equivalent to  $5.2 \div 0.04$ .

A.  $\frac{52}{10} \div \frac{4}{100}$

B.  $\frac{520}{100} \div \frac{4}{100}$

C.  $52 \div 4$

D.  $520 \div 4$

E.  $\frac{52}{100} \div \frac{4}{100}$

2. Determine the value of each expression.

**a**  $2.304 \div 0.06$

**b**  $15.48 \div 0.2$

## Sub-Unit Quiz 2 (continued)


## Unit 5


3. Madison likes to run races. Recently, it took her 26.66 minutes to run 3.1 miles.


- a How many minutes per mile did Madison run?
  
  
  
  
  
  
  
  
  
  
- b If she continues to run at the same pace, how long will it take her to run 13.1 miles?

Show or explain your thinking.

 Standard	MA.6.NSO.2.1
Problem(s)	1, 2a, 2b, 3a, 3b

Problem 1		 Standards: MA.6.NSO.2, MTR.5.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>All <b>correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>\frac{52}{10} \div \frac{4}{100}</math></li> <li>• <math>\frac{520}{100} \div \frac{4}{100}</math></li> <li>• <math>520 \div 4</math></li> </ul>	<p><b>One or two correct</b> choices and <b>no incorrect</b> choices.</p> <p><b>All correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One or two correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 2a		 Standard: MA.6.NSO.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b></p> <p><b>38.4</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response places the decimal in the incorrect place, such as 3.84 or 384.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 2b		 Standard: MA.6.NSO.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b></p> <p><b>77.4</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response places the decimal in the incorrect place, such as 7.74 or 774.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3a			
Standards: MA.6.NSO.2.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> 8.6 minutes per mile</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes an attempt to calculate <math>26.66 \div 3.1</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b			
Standards: MA.6.NSO.2.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation. 112.66 minutes.</p> <p><b>If students' responses in Problem 5a are correct, here is a sample response:</b> Madison can run one mile in 8.6 minutes. <math>13.1 \cdot 8.6</math> tells us how many minutes it will take her to run 13.1 miles. That's like <math>\frac{131}{10} \cdot \frac{86}{10}</math>, which equals <math>\frac{11266}{100}</math> or 112.66 minutes.</p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Response places the decimal in the incorrect place, such as 11.266 or 1126.6.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

**Unit 5**

1. Select *all* the expressions that are equivalent to  $\frac{35}{100}$ .

- A. 0.35
- B. 35 thousandths
- C. 3.5
- D. 35%
- E. 35 hundredths

2. **a** Which expression has the same value as  $224.7 \div 0.7$ ?

A.  $2247 \div 70$

B.  $2247 \div 7$

C.  $2247 \div 700$

D.  $\frac{2247}{10} \div \frac{70}{10}$

**b** Calculate the quotient of  $224.7 \div 0.7$ .

3. Calculate the value of the expression.

$$0.32 \cdot 12.125$$

**End-of-Unit Assessment** (continued)**Unit 5**

4. Circle the expression that has the greater value.

$2 \cdot 0.003$

$0.2 \cdot 0.03$

They have the same value

Explain your reasoning.

5. Abdullah and Terrance both earned \$136 in January and decided to save 6.5% of this income. Here are the expressions they wrote to determine how much to save.

Abdullah	Terrance
6.5% of 136	6.5% of 136
= $0.65 \cdot 136$	= $0.065 \cdot 136$

- a Whose work do you agree with? Circle one.

Abdullah's

Terrance's

Neither

Explain your thinking.

- b Calculate 6.5% of \$136.

## End-of-Unit Assessment (continued)

### Unit 5

6. Abena also earned \$136 in February and saved \$27.20 of that money. Her goal was to save a minimum of 20% of her earnings. How did Abena do? Circle one.

She saved less than 20%

She saved more than 20%

She saved exactly 20%

Explain your reasoning.

<b>Standard</b>	MA.6.NSO.3.5	MA.6.NSO.2.1
<b>Problem(s)</b>	1, 5a, 5b, 6	2a, 2b, 3, 4

<b>Problem 1</b> <span style="float: right;">Standards: MA.6.NSO.3.5, MTR.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>All correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>• 0.35</li> <li>• 35%</li> <li>• 35 hundredths</li> </ul>	<p>One or two correct choices and no incorrect choices.</p> <p>All correct choices and one incorrect choice.</p>	<p>One or two correct choices and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>

<b>Problem 2a</b> <span style="float: right;">Standards: MA.6.NSO.2.1, MTR.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p>2247 ÷ 7</p>			<p>Incorrect choice.</p> <p>Students who select <math>\frac{2247}{10} \div \frac{70}{10}</math> may have identified that the original numbers both had digits in the tenths place.</p>

<b>Problem 2b</b> <span style="float: right;">Standard: MA.6.NSO.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p>321</p>	<p>Response shows conceptual understanding with minor errors.</p>	<p>Response shows incomplete understanding with significant errors.</p> <p>Students who write 32.1 or 3.21 may have used an expression that was not equivalent.</p>	<p>Response shows limited understanding.</p>

Problem 3 <span style="float: right;">Standard: MA.6.NSO.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> <b>3.88</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 0.388 may have thought the answer should have three decimal places since 12.125 has three decimal places.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4 <span style="float: right;">Standards: MA.6.NSO.2.1, MTR.2.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>They have the same value.</b></p> <p><b>Explanations vary.</b></p> <p><b><math>2 \cdot 0.003</math> is like <math>2 \cdot \frac{3}{1000}</math> or 6 thousandths.</b></p> <p><b><math>0.2 \cdot 0.03</math> is like <math>\frac{2}{10} \cdot \frac{3}{100}</math>, which is also 6 thousandths.</b></p> <p><b>That means both expressions have the same value.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who choose either expression may have correctly calculated that one of them is equivalent to 0.006.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., Response does not explain what the value is or how they know that the expressions have the same value.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5a			
Standards: MA.6.NSO.3.5, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Terrance.</b>  <i>Explanations vary.</i>  <b>6.5% is the same as</b>  <math>\frac{6.5}{100}</math> or <math>\frac{65}{1000}</math> or  <b>65 thousandths.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5b			
Standard: MA.6.NSO.3.5			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <b>\$8.84</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$88.40 may have calculated <math>0.65 \cdot 136</math>.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6			
Standard: MA.6.NSO.3.5			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>She saved exactly 20%.</b></p> <p><i>Explanations vary.</i>  <math>\frac{27.20}{136}</math> is the same as <math>\frac{272}{1360}</math> or 0.2, meaning that <b>Abena saved 20%.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

## Unit 5

1. Select *all* the expressions that are equivalent to  $\frac{42}{1000}$ .

- A. 0.42
- B. 4.2%
- C. 0.042
- D. 42 thousandths
- E. 42 hundredths

2. **a** Which expression has the same value as  $127.8 \div 0.6$ ?

A.  $12780 \div 6$

B.  $1278 \div 60$

C.  $1278 \div 600$

D.  $\frac{1278}{10} \div \frac{6}{10}$

**b** Calculate the quotient of  $127.8 \div 0.6$ .

3. Calculate the value of the expression.

$$12.75 \cdot 0.2$$

**End-of-Unit Assessment** (continued)**Unit 5**

4. Circle the expression that has the greater value.

$3 \cdot 0.002$

$0.03 \cdot 0.02$

They have the same value

Explain your reasoning.

5. Liam and Luca both earned \$152.50 in January and decided to save 8% of this income. Here are the expressions they wrote to determine how much to save.

Liam	Luca
8% of 152.5	8% of 152.5
= $0.8 \cdot 152.5$	= $0.08 \cdot 152.5$

- a Whose work do you agree with? Circle one.

Liam's

Luca's

Neither

Explain your thinking.

- b Calculate 8% of \$152.50.

**End-of-Unit Assessment** (continued)

**Unit 5**

6. Carlos also earned \$152.50 in February and saved \$6.10 of that money. His goal was to save a minimum of 3.6%. How did Carlos do? Circle one.


He saved less than 3.6%


He saved more than 3.6%


He saved exactly 3.6%

Explain your reasoning.

 <b>Standard</b>	MA.6.AR.3.2	MA.6.NSO.2
<b>Problem(s)</b>	1, 5a, 5b, 6	2a, 2b, 3, 4

Problem 1		 <b>Standard: MA.6.AR.3.2</b>	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>All correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• 4.2%</li> <li>• 0.042</li> <li>• 42 thousandths</li> </ul>	<p><b>One or two correct</b> choices and <b>no incorrect</b> choices.</p> <p><b>All correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One or two correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 2a		 <b>Standards: MA.6.NSO.2, MTR.5.1</b>	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct choice:</b></p> $\frac{1278}{10} \div \frac{6}{10}$			<p><b>Incorrect choice.</b></p> <p>Students who select <math>12780 \div 6</math> may have thought of both numbers as hundredths.</p>

Problem 2b		 <b>Standards: MA.6.NSO.2, MTR.5.1</b>	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b></p> <p>213</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 21.3 or 2.13 may have used an expression that is not equivalent.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 3			
Standards: MA.6.NSO.2, MTR.3.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> <b>2.55</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 25.5 may have thought the answer should have two decimal places since 12.75 has two decimal places.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 4			
Standards: MA.6.NSO.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response and complete explanation.</b> <b><math>3 \cdot 0.002</math>.</b></p> <p><i>Explanations vary.</i> <b><math>3 \cdot 0.002</math> is like <math>3 \cdot \frac{2}{1000}</math> or 6 thousandths.</b> <b><math>0.03 \cdot 0.02</math> is like <math>\frac{3}{100} \cdot \frac{2}{100}</math>, which is 6 ten-thousandths, so <math>3 \cdot 0.002</math> is larger.</b></p>	<p><b>Correct response with minor flaws in explanation.</b></p> <p><b>Incorrect response with logical and complete explanation.</b></p> <p>Students who select <i>They have the same value</i> may have miscalculated both expressions as equivalent to 0.006 or 0.0006.</p>	<p><b>Correct response with incomplete explanation.</b></p> <p><b>Incorrect response with explanation that shows partial understanding.</b></p>	<p><b>Incorrect response with no explanation.</b></p>

Problem 5a			
Standards: MA.6.AR.3.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>Luca.</b>  <i>Explanations vary.</i>  <b>8% is the same as <math>\frac{8}{100}</math> or 8 hundredths.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 5b			
Standards: MA.6.AR.3.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <b>\$12.20</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$122 may have calculated <math>0.8 \cdot 152.5</math>.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6			
Standards: MA.6.AR.3.2, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>He saved more than 3.6%. Explanations vary.</b> <math>\frac{6.1}{152.5}</math> is the same as <math>\frac{61}{1525}</math> or 0.04, meaning that Carlos saved 4%, which is more than 3.6%.</p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Unit 5

**Show What You  
Know PDFs**



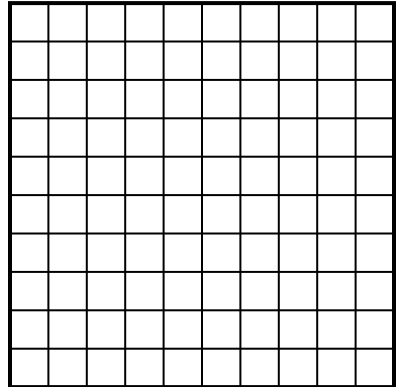
# Show What You Know



5.01

Multiply  $0.3 \cdot 0.9$ . Show your thinking.

$$0.3 \cdot 0.9 = ?$$



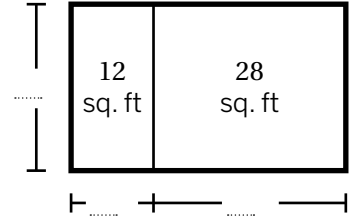
# Show What You Know



5.02

Here is an area model.

- a** Determine the missing lengths and widths on the planter.



- b** Write two other expressions to represent the total area of  $12 + 28$ .

# Show What You Know



5.03

Calculate  $4.2 \cdot 2.6$ . Show your thinking.  
Use the diagram if it helps with your thinking.



## Show What You Know



5.04

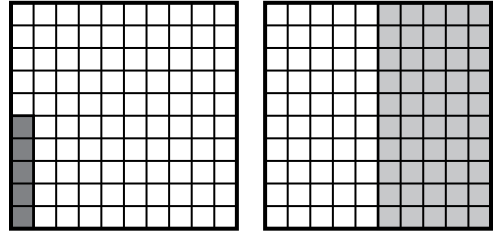
Calculate  $1.6 \cdot 0.021$ . Show your thinking.

# Show What You Know



5.05

- a** Rewrite  $1.5 \div 0.05$  as a division expression using fractions.



- b** Calculate  $1.5 \div 0.05$ . Show your thinking.

## Show What You Know



5.06

Calculate  $0.071 \div 0.02$ . Show your thinking.



**Show What You Know****5.08**

The DesWagon can hold 12.4 gallons of gas.

How much more would it cost to fill a tank of gas in Hawaii than in Mississippi? Show your thinking.

State	Average Cost of Gas per Gallon
Hawaii	\$4.70
Mississippi	\$3.18

Source: AAA

# Show What You Know



5.09


Complete the table.

Percent (%)	Fraction	Decimal
35		
7		
2.3		



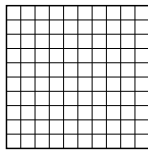
### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.01**

Multiply  $0.3 \cdot 0.9$ . Show your thinking.  
**0.27**


$0.3 \cdot 0.9 = ?$



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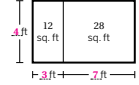
### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.02**

Here is an area model.

a Determine the missing lengths and widths on the planter.  
**Responses vary. Sample shown on diagram.**




b Write two other expressions to represent the total area of  $12 + 28$ .  
**Responses vary.**

- $4(3 + 7)$
- $4(3) + 4(7)$
- $2(6 + 14)$
- $2(6) + 2(14)$
- $40$


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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.03**

Calculate  $4.2 \cdot 2.6$ . Show your thinking.  
Use the diagram if it helps with your thinking.  
**10.92. Methods vary. Sample answer shown.**



$8 + 0.4 + 2.4 + 0.12 = 10.92$

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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.04**


Calculate  $1.6 \cdot 0.021$ . Show your thinking.  
**0.0336. Responses vary.**

$\frac{16}{10} \times \frac{21}{1000} = \frac{336}{10,000}$  or **0.0336.**

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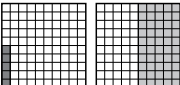
Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.05**

a Rewrite  $1.5 \div 0.05$  as a division expression using fractions.  
**Responses vary.**  $\frac{150}{100} \div \frac{5}{100}$  (or equivalent)


b Calculate  $1.5 \div 0.05$ . Show your thinking.  
**30. Responses vary.**  
 $\frac{150}{100} \div \frac{5}{100} = \frac{150}{5} = 30$



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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_


**Show What You Know**  **5.06**

Calculate  $0.071 \div 0.02$ . Show your thinking.  
**3.55. Responses vary.**  
 $\frac{71}{1000} \div \frac{20}{1000} = \frac{71}{20}$   
 $\frac{3.55}{20} \overline{) 71.00}$   
 $\underline{-60}$   
 $110$   
 $\underline{-100}$   
 $100$   
 $\underline{-100}$   
 $0$

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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.07**

A movie is 9.75 seconds long.


a Describe a situation related to this movie that could be represented by  $9.75 \div 2.5$ .  
**Responses vary. It takes me 9.75 ÷ 2.5 seconds to watch the movie when I play it at 2.5x speed.**

b Calculate the value of  $9.75 \div 2.5$ . Show your thinking.  
**3.9. Methods vary.**  
 $9.75 \div 2.5 = \frac{975}{250} = 3.9$

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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **5.08**

The DesWagon can hold 12.4 gallons of gas.

How much more would it cost to fill a tank of gas in Hawaii than in Mississippi? Show your thinking.  
**18.85. Work varies.**  
 $12.4 \cdot 4.70 = 58.28$   
 $12.4 \cdot 3.18 = 39.432$   
 $58.28 - 39.432 = 18.848$


State	Average Cost of Gas per Gallon
Hawaii	\$4.70
Mississippi	\$3.18

Source: AAA

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Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  5.09


Complete the table.

Percent (%)	Fraction	Decimal
35	$\frac{35}{100}$ (or equivalent)	0.35
7	$\frac{7}{100}$	0.07
2.3	$\frac{2.3}{100}$ (or equivalent)	0.023

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Show What You Know Lesson 10

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  5.10

A small breakfast cafe has a monthly budget of \$6,250. The cafe manager spends 30% of the budget on food.

- Write an expression to represent how much money the cafe manager spends on food each month.  
 $0.3 \cdot 6250$
- How much money does the cafe manager spend on food each month? Show your thinking.  
 $\$1,875$ . *Work varies.* 10% of \$6,250 is \$625. 30% of \$6,250 is 3 times \$625, which is \$1,875.

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# Unit 6

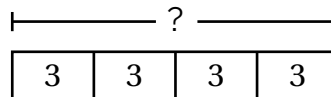
## **Assessments and Rubrics**



# Pre-Unit Check

## Unit 6

1. Which equation represents this tape diagram?



- A.  $4 + 3 = ?$
- B.  $? = 4 \cdot 3$
- C.  $? = 3 \cdot 3 \cdot 3 \cdot 3$
- D.  $4 \div 3 = ?$

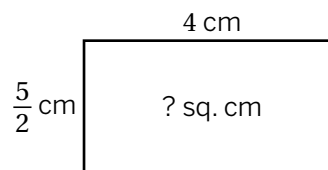
2. Determine the unknown value in each equation.

- a  $? + 15 = 35$
- b  $4 \cdot ? = 28$

3. Determine the value of each expression.

- a  $21.8 + 9.8$
- b  $10 - 7.05$
- c  $4.3 \cdot 0.2$
- d  $5.25 \div 0.25$

4. Calculate the area of this rectangle.



- 5. a What is the value of  $4 + 3 \cdot 5$ ?
- b Circle the expression that has the same value as  $4 + 3 \cdot 5$ .

$(4 + 3) \cdot 5$        $4 + (3 \cdot 5)$        $4 \cdot 3 + 5$

Explain your thinking.

## Pre-Unit Check (continued)

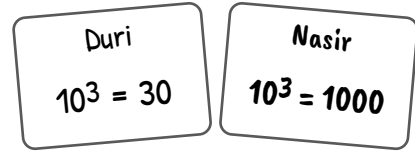
## Unit 6

6. Duri says the value of  $10^3$  is 30.

Nasir says the value of  $10^3$  is 1,000.

Who is correct? Circle one.

Duri      Nasir      Both      Neither



Explain your thinking.

**Sub-Unit Quiz****Unit 6**

1. Select *all* the equations where  $x = 6$  is a solution.

A.  $4 = 2 + x$

B.  $x - 11 = 5$

C.  $12 = 2x$

D.  $2 = 3x$

E.  $\frac{1}{2}x = 3$

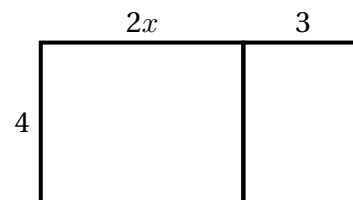
2. Which expression represents the area of this rectangle?

A.  $4(2x + 12)$

B.  $2(4x + 3)$

C.  $8x + 12$

D.  $8x + 3$



3. Determine the solution to each equation.

**a**  $3 + x = 10$

**b**  $1.8 = 2x$

**c**  $\frac{1}{3}x = 9$

**Sub-Unit Quiz (continued)****Unit 6**

4. Here is an expression:  $3(2a + 6)$ .

- a What is the value of this expression when  $a = 4$ ?
  
  
  
  
  
  
  
  
  
  
- b Write an equivalent expression. Draw a rectangle if it helps with your thinking.
  
  
  
  
  
  
  
  
  
  
- c What is the value of your expression when  $a = 4$ ?

5. Guiying has \$10 to buy tacos that cost \$2.50 each. Guiying can buy  $x$  tacos in total.

- a Which equation represents this situation?  
A.  $10x = 2.50$       B.  $2.50x = 10$       C.  $x + 2.50 = 10$       D.  $x + 10 = 2.50$
  
  
  
  
  
  
  
  
  
  
- b Here is a new equation:  $12 + y = 20$ . Describe a situation that could represent this equation.
  
  
  
  
  
  
  
  
  
  
- c Determine the value of  $y$ .

Explain what it means in your situation.

Standard	MA.6.AR.1.1	MA.6.AR.1.3	MA.6.AR.1.4	MA.6.AR.2	MA.6.AR.2.1	MA.7.AR.1.2
Problem(s)	5a	4a, 4c	2, 4b	3a, 3b, 3c, 5a, 5c	1, 5b	2, 4b

Problem 1				Standard: MA.6.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>12 = 2x</math></li> <li>• <math>\frac{1}{2}x = 3</math></li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>	

Problem 2				Standards: MA.6.AR.1.4, MA.7.AR.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct choice:</b></p> <p><math>8x + 12</math></p>			<p><b>Incorrect choice.</b></p>	

Problem 3a				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b></p> <p><math>x = 7</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 13 may have solved <math>10 + 3 = x</math>.</p>	<p>Response shows <b>limited understanding.</b></p>	

Problem 3b				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 0.9</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 3.6 may have solved <math>1.8 \cdot 2 = x</math>.</p> <p>Students who write -0.2 may have solved <math>1.8 = 2 + x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 27</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 3 may have solved <math>\frac{1}{3} \cdot 9 = x</math>.</p> <p>Students who write <math>8\frac{2}{3}</math> may have solved <math>9 - \frac{1}{3} = x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4a			
Standards: MA.6.AR.1.3, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> 42</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes an attempt to distribute the 3 to each term but has a calculation error.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 30 may have incorrectly distributed the 3 to get <math>6a + 6</math>.</p> <p>Students who write 26 may have incorrectly distributed the 3 to get <math>2a + 18</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b			
Standards: MA.6.AR.1.4, MA.7.AR.1.2, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> <i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• <math>6a + 18</math></li> <li>• <math>6(a + 3)</math></li> <li>• <math>3(6 + 2a)</math></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes an equivalent expression of either <math>6a</math> or <math>18</math>, such as:</p> <ul style="list-style-type: none"> <li>• <math>6a + 6</math></li> <li>• <math>6(a + 1)</math></li> <li>• <math>2a + 18</math></li> <li>• <math>2(a + 9)</math></li> </ul>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4c			
Standards: MA.6.AR.1.3, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> 42. <i>Note: Students' responses depend on their responses in Problem 4b. Students who respond 42 or who correctly evaluate their expressions are considered correct.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 40 may have made a calculation error, such as <math>6(4) + 18 = 40</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 28 may have used incorrect operations, such as <math>6 + (4) + 18 = 28</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5a			
Standards: MA.6.AR.1.1, MA.6.AR.2, MTR.6.1, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><math>2.50x = 10</math></p>			<p>Incorrect choice.</p>

Problem 5b			
Standards: MA.6.AR.2.1, MTR.6.1, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><i>Responses vary. Prisha has 12 eggs. She needs 20 eggs to make an egg dish for a party. How many more eggs does she need?</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a context that uses subtraction.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes a context that uses another operation besides subtraction or addition.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.6.AR.2, MTR.6.1, MTR.7.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response and <b>complete</b> explanation.</p> <p><i><math>y = 8</math>. Explanations vary. 8 represents how many more eggs Prisha needs to have a total of 20 eggs.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

## Unit 6

1. Select *all* the equations where  $x = 3$  is a solution.

A.  $x - 3 = 0$

B.  $1 + x = 2$

C.  $33 = 3x$

D.  $12 = 4x$

E.  $\frac{1}{2}x = 6$

2. Which expression is equivalent to  $4(2x + 1) + 5$ ?

A.  $8x + 9$

B.  $8x + 6$

C.  $6x + 6$

D.  $8x + 24$

3. Determine the solution to each equation.

**a**  $\frac{3}{4} + x = 6$

**b**  $24 = 2x$

**c**  $x + 8 = 12.4$

4. Here are four expressions.

$4^3$

$3^4$

$4 \cdot 4 \cdot 4$

$3 \cdot 4$

**a** Circle *two* expressions that have the same value. Show or explain your thinking.

**b** Here is a new expression:  $5^4$ . Write an expression that has the same value.

**End-of-Unit Assessment** (continued)**Unit 6**

5. Tyani is selling pizza to raise money for a field trip. She sells slices of pizza for \$1.25 each.

a Complete the table.

Number of Pizza Slices Sold	Amount of Money Earned (\$)
1	1.25
2	
20	
50	

b Write an expression that represents the amount of money earned if she sells  $s$  slices of pizza.

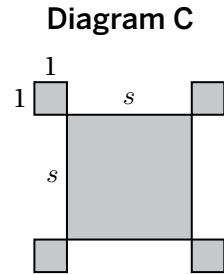
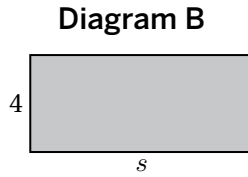
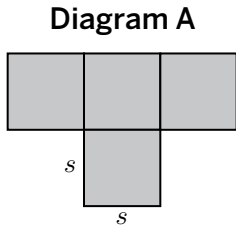
c How many slices of pizza does Tyani need to sell to earn \$100?

Explain your thinking.

**End-of-Unit Assessment (continued)**

**Unit 6**

5. Here are three different diagrams.



**a** Match each diagram with an expression that describes its area in square units.

$4 + s^2$

$4s^2$

$4s$

Diagram .....

Diagram .....

Diagram .....

**b** Calculate the area of each diagram if  $s = 3$ .

$4 + s^2$

$4s^2$

$4s$

**c** Habib drew a new diagram that has an area of  $6 + 4s^2$ .

What is the area of Habib's diagram when  $s = \frac{1}{2}$ ?

**End-of-Unit Assessment (continued)****Unit 6**

7. Dalia is painting her room. After painting  $\frac{1}{10}$  of her room, Dalia has used  $\frac{1}{2}$  of a can of paint. Select *all* of the true statements.
- A. Each can of paint will cover  $\frac{1}{20}$  of the Dalia's room.
  - B. 3 cans of paint will cover 60% of the Dalia's room.
  - C. Dalia's entire room requires 5 cans of paint.
  - D. Dalia's entire room requires 20 cans of paint.
  - E. Painting  $\frac{1}{2}$  of Dalia's room requires 10 cans of paint.
8. Oliver wants to cut a piece of metal to be 30 centimeters long. The piece of metal ends up being 29.4 centimeters long. What is the percent error in this situation?
- A. 1.02%                      B. 0.6%                      C. 2%                      D. 20%
9. A lamp originally costs \$30. Krishna has a 5% off coupon for the lamp. After the coupon, a 5% sales tax is applied. He will pay:
- A. More than \$30.                      B. Less than \$30.                      C. Exactly \$30.

Explain your thinking.

10. A loan is taken out to cover the cost of a home renovation. The bank offers a simple interest rate of 6.2% per year for a 4-year term. If the loan amount is \$1,200, what is the total amount that must be repaid at the end of 4 years?

Standard	MA.6.AR.1	MA.6.AR.1.1	MA.6.AR.1.3	MA.6.AR.1.4	MA.6.AR.2	MA.6.AR.2.1	MA.6.NSO.3.3	MA.7.AR.1.2
Problem(s)	5b, 6a	5a, 5c	6b, 6c	2, 4a	3a, 3b, 3c	1	4a, 4b	2, 4a

Standard	MA.7.AR.3.1		MA.7.AR.3.2	MA.7.AR.4.2	MA.7.AR.4.5
Problem(s)	8, 9, 10		7	7	7

Problem 1		Standard: MA.6.AR.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li><math>x - 3 = 0</math></li> <li><math>12 = 4x</math></li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 2		Standards: MA.6.AR.1.4, MA.7.AR.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct choice:</b></p> <p><math>8x + 9</math></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <math>8x + 6</math> may have only multiplied one term.</p> <p>Students who select <math>8x + 24</math> may have added <math>5 + 1</math> before multiplying.</p>

Problem 3a		Standard: MA.6.AR.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b></p> <p><math>x = 5\frac{1}{4}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 8 may have solved <math>\frac{3}{4}x = 6</math>.</p> <p>Students who write <math>6\frac{3}{4}</math> may have solved <math>\frac{3}{4} + 6 = x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3b				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 12</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 48 may have solved <math>24 \cdot 2 = x</math>.</p> <p>Students who write 22 may have solved <math>24 = 2 + x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 4.4</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 20.4 may have solved <math>12.4 + 8 = x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4a				Standards: MA.6.NSO.3.3, MA.6.AR.1.4, MA.7.AR.1.2, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete</b> explanation. <math>4^3</math> and <math>4 \cdot 4 \cdot 4</math>. <i>Explanations vary.</i> <b>These have the same value because <math>4^3</math> means <math>4 \cdot 4 \cdot 4</math>, and they are both equal to 64.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>	

Problem 4b		Standard: MA.6.NSO.3.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <i>Responses vary.</i>  <math>5 \cdot 5 \cdot 5 \cdot 5</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes an attempt to multiply <math>5 \cdot 5 \cdot 5 \cdot 5</math> but has a calculation error.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>5 \cdot 4</math> or <math>20</math> may understand that exponents involve multiplication.</p> <p>Students who write <math>4 \cdot 4 \cdot 4 \cdot 4 \cdot 4</math> may have written an expression that is equivalent to <math>4^5</math>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write 9 may have mistaken exponentiation for addition.</p>

Problem 5a		Standard: MA.6.AR.1.1						
4 Meeting	3 Approaching	2 Developing	1 Beginning					
<p><b>Correct responses:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Amount of Money Earned (\$)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.25</td> </tr> <tr> <td style="text-align: center;"><b>2.50</b></td> </tr> <tr> <td style="text-align: center;"><b>25</b></td> </tr> <tr> <td style="text-align: center;"><b>62.50</b></td> </tr> </tbody> </table>	Amount of Money Earned (\$)	1.25	<b>2.50</b>	<b>25</b>	<b>62.50</b>	<p><b>Two correct</b> responses and <b>one incorrect</b> response.</p>	<p><b>One correct</b> response and <b>two incorrect</b> responses.</p>	<p>Response shows <b>limited understanding</b>.</p>
Amount of Money Earned (\$)								
1.25								
<b>2.50</b>								
<b>25</b>								
<b>62.50</b>								

Problem 5b		Standards: MA.6.AR.1, MTR.7.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <math>1.25s</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.6.AR.1.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>80 slices of pizza.</b></p> <p><b>Explanations vary.</b></p> <ul style="list-style-type: none"> <li>• I wrote and solved the equation <math>100 = 1.25s</math>.</li> <li>• I counted groups of 20 slices (each group earns \$25) until I got to \$100.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.AR.1, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct responses:</b></p> <ul style="list-style-type: none"> <li>• Diagram C: <math>4 + s^2</math></li> <li>• Diagram A: <math>4s^2</math></li> <li>• Diagram B: <math>4s</math></li> </ul>	<p><b>Two</b> correct matches.</p>	<p><b>One</b> correct match.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6b			
Standard: MA.6.AR.1.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct responses:</b></p> <ul style="list-style-type: none"> <li>• <math>4 + s^2</math>: <b>13 square units</b></li> <li>• <math>4s^2</math>: <b>36 square units</b></li> <li>• <math>4s</math>: <b>12 square units</b></li> </ul>	<p>Student correctly calculated the value of <b>two</b> expressions.</p>	<p>Student correctly calculated the value of <b>one</b> expression.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6c			Standard: MA.6.AR.1.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b> 7 square units (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 10 may have used the expression <math>6 + 4s \cdot 2</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 8 may have used the expression <math>6 + 4s</math>.</p> <p>Students who write <math>\frac{10}{4}</math> (or equivalent) may have added <math>6 + 4</math> as a first step.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7			Standards: MA.7.AR.3.2, MA.7.AR.4.2, MA.7.AR.4.5
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>3 cans of paint will cover 60% of the bedroom.</li> <li>The entire bedroom requires 5 cans of paint.</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 8				Standard: MA.7.AR.3.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct choice:</b> 2%</p>			<p><b>Incorrect choice.</b></p> <p>Students who select 0.6% may have calculated the actual error in centimeters and not the percent error.</p> <p>Students who select 20% may have correctly calculated <math>\frac{0.6}{30}</math>, but did not correctly convert this to a percentage.</p> <p>Students who select 1.02% may have calculated what percentage 30 is of 29.4.</p>	

Problem 9				Standard: MA.7.AR.3.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete</b> explanation. Less than \$30. Explanations vary. After a 5% discount, the lamp costs \$28.50. Then after a 5% tax, the lamp costs about \$29.93.</p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b> of multistep percentage problems.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>	

Problem 10		Standards: MA.7.AR.3.1, MTR.7.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>\$1297.60</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$297.60 may have solved the problem, "How much interest will be paid at the end of 4 years?"</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$30,960 may not have written the interest rate as a decimal.</p> <p>Students who write \$29,760 may not have written the interest rate as a decimal or added the interest to the initial amount of the loan.</p>	<p>Response shows <b>limited understanding</b>.</p>

# End-of-Unit Assessment

**Unit 6**

1. Select *all* the equations where  $x = 4$  is a solution.

A.  $\frac{1}{2}x = 8$

B.  $x - 4 = 0$

C.  $44 = 4x$

D.  $20 = 5x$

E.  $1 + x = 3$

2. Which expression is equivalent to  $5(2x + 1) + 4$ ?

A.  $10x + 5$

B.  $7x + 5$

C.  $10x + 25$

D.  $10x + 9$

3. Determine the solution to each equation.

**a**  $\frac{2}{3} + x = 7$

**b**  $36 = 4x$

**c**  $x + 6 = 10.2$

4. Here are four expressions.

$3^4$

$4^3$

$3 \cdot 4$

$3 \cdot 3 \cdot 3 \cdot 3$

**a** Circle two expressions that have the same value. Show or explain your thinking.

**b** Here is a new expression:  $6^3$ . Write an expression that has the same value.

**End-of-Unit Assessment** (continued)**Unit 6**

5. Sora is buying colored pencils at a store. Each pencil costs \$1.20.

a Complete the table.

Number of Pencils Bought	Total Cost (\$)
1	1.20
2	
20	
50	

b Write an expression that represents the total cost if Sora buys  $p$  pencils.

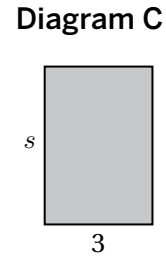
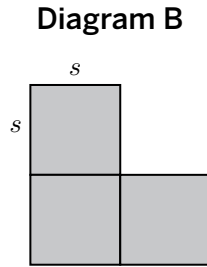
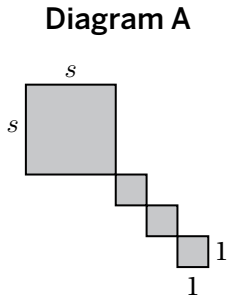
c How many pencils could Sora buy with \$150?

Explain your thinking.

**End-of-Unit Assessment (continued)**

**Unit 6**

6. Here are three different diagrams.



**a** Match each diagram with an expression that describes its area in square units.

$3s$	$3s^2$	$s^2 + 3$
Diagram .....	Diagram .....	Diagram .....

**b** Calculate the area of each diagram if  $s = 4$ .

$3s$	$3s^2$	$s^2 + 3$
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**c** Dyani drew a new diagram that has an area of  $8s^2 + 6$ .

What is the area of Dyani's diagram when  $s = \frac{1}{2}$ ?

**End-of-Unit Assessment (continued)****Unit 6**

7. Kayleen is mowing a field. After mowing  $\frac{1}{8}$  of the field, she used  $\frac{1}{2}$  of a gallon of gas. Select *all* of the true statements.
- A. Mowing the entire field requires 4 gallons of gas.
  - B. Mowing the entire field requires 16 gallons of gas.
  - C. Each gallon of gas will allow Kayleen to mow  $\frac{1}{4}$  of the field.
  - D. Mowing  $\frac{1}{2}$  of the field requires 2 gallons of gas.
  - E. 3 gallons of gas will allow Kayleen to mow 50% of the field.
8. The temperature in a room is  $20.0^{\circ}\text{C}$ . A thermometer measures it as  $20.8^{\circ}\text{C}$ . What is the percent error in this situation?
- A. 40%                      B. 4%                      C. 1.04%                      D. 0.8%
9. Na'ilah purchases a rug that costs \$50. A 10% sales tax is applied. After the tax, Na'ilah uses a 10% off coupon. She will pay:
- A. Exactly \$50.                      B. More than \$50.                      C. Less than \$50.

Explain your thinking.

10. A loan is taken out to cover the cost of purchasing new furniture. The bank offers a simple interest rate of 5.8% per year for a 3-year term. If the loan amount is \$1,500, what is the total amount that must be repaid at the end of 3 years?

Standard	MA.6.AR.1	MA.6.AR.1.1	MA.6.AR.1.3	MA.6.AR.1.4	MA.6.AR.2	MA.6.AR.2.1	MA.6.NSO.3.3	MA.7.AR.1.2
Problem(s)	5b, 6a	5a, 5c	6b, 6c	2, 4a	3a, 3b, 3c	1	4a, 4b	2, 4a

Standard	MA.7.AR.3.1		MA.7.AR.3.2		MA.7.AR.4.2		MA.7.AR.4.5	
Problem(s)	8, 9, 10		7		7		7	

Problem 1				Standard: MA.6.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <math>x - 4 = 0</math></li> <li>• <math>20 = 5x</math></li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>	

Problem 2				Standards: MA.6.AR.1.4, MA.7.AR.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct choice:</b></p> <p><math>10x + 9</math></p>			<p><b>Incorrect choice.</b></p> <p>Students who select <math>10x + 5</math> may have only multiplied one term.</p> <p>Students who select <math>10x + 25</math> may have added <math>1 + 4</math> before multiplying.</p>	

Problem 3a				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b></p> <p><math>x = 6\frac{1}{3}</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 10.5 may have solved <math>\frac{2}{3}x = 7</math>.</p> <p>Students who write <math>7\frac{2}{3}</math> may have solved <math>\frac{2}{3} + 7 = x</math>.</p>	<p>Response shows <b>limited understanding.</b></p>	

Problem 3b				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 9</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 144 may have solved <math>36 \cdot 4 = x</math>.</p> <p>Students who write 32 may have solved <math>36 = 4 + x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.AR.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct response:</b> <math>x = 4.2</math> (or equivalent)</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 16.2 may have solved <math>10.2 + 6 = x</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4a				Standards: MA.6.NSO.3.3, MA.6.AR.1.4, MA.7.AR.1.2, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete</b> explanation. <math>3^4</math> and <math>3 \cdot 3 \cdot 3 \cdot 3</math>. <i>Explanations vary.</i> <b>These have the same value because <math>3^4</math> means <math>3 \cdot 3 \cdot 3 \cdot 3</math>, and they are both equal to 81.</b></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>	

Problem 4b			
Standard: MA.6.AR.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <i>Responses vary.</i>  <b>6 • 6 • 6</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes an attempt to multiply <math>6 \cdot 6 \cdot 6</math> but has a calculation error.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>6 \cdot 3</math> or 18 may understand that exponents involve multiplication.</p> <p>Students who write <math>3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3</math> may have written an expression that is equivalent to <math>3^6</math>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write 9 may have mistaken exponentiation for addition.</p>

Problem 5a								
Standard: MA.6.AR.2								
4 Meeting	3 Approaching	2 Developing	1 Beginning					
<p><b>Correct responses:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Total Cost (\$)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.20</td> </tr> <tr> <td style="text-align: center;"><b>2.40</b></td> </tr> <tr> <td style="text-align: center;"><b>24</b></td> </tr> <tr> <td style="text-align: center;"><b>60</b></td> </tr> </tbody> </table>	Total Cost (\$)	1.20	<b>2.40</b>	<b>24</b>	<b>60</b>	<p><b>Two correct</b> responses and <b>one incorrect</b> response.</p>	<p><b>One correct</b> response and <b>two incorrect</b> responses.</p>	<p>Response shows <b>limited understanding</b>.</p>
Total Cost (\$)								
1.20								
<b>2.40</b>								
<b>24</b>								
<b>60</b>								

Problem 5b			
Standards: MA.6.NSO.3.3, MA.6.AR.1.4, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <b>1. 20p (or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.6.AR.1.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><b>125 pencils.</b></p> <p><i>Explanations vary.</i></p> <ul style="list-style-type: none"> <li>• I wrote and solved the equation <math>150 = 1.20p</math>.</li> <li>• I figured out how many groups of \$60 I need to get to \$150. Each group is 50 pencils, so I need 2.5 groups of 50, which is 125.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 6a			
Standards: MA.6.AR.1, MTR.5.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct responses:</b></p> <ul style="list-style-type: none"> <li>• Diagram C: <math>3s</math></li> <li>• Diagram B: <math>3s^2</math></li> <li>• Diagram A: <math>s^2 + 3</math></li> </ul>	<p><b>Two</b> correct matches.</p>	<p><b>One</b> correct match.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6b			
Standard: MA.6.AR.1.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct responses:</b></p> <ul style="list-style-type: none"> <li>• <math>3s</math>: 12 square units</li> <li>• <math>3s^2</math>: 48 square units</li> <li>• <math>s^2 + 3</math>: 19 square units</li> </ul>	<p>Student correctly calculated the value of <b>two</b> expressions.</p>	<p>Student correctly calculated the value of <b>one</b> expression.</p>	<p>Response shows <b>limited understanding.</b></p>

Problem 6c		Standard: MA.6.AR.1.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct response:</b>  <b>8 square units</b>  <b>(or equivalent)</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 14 may have used the expression <math>8s \cdot 2 + 6</math>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 10 may have used the expression <math>8s + 6</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7		Standards: MA.7.AR.3.2, MA.7.AR.4.2, MA.7.AR.4.5	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>All <b>correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>• <b>Mowing the entire field requires 4 gallons of gas.</b></li> <li>• <b>Each gallon of gas will allow Kayleen to mow <math>\frac{1}{4}</math> of the field.</b></li> <li>• <b>Mowing <math>\frac{1}{2}</math> of the field requires 2 gallons of gas.</b></li> </ul>	<p><b>One or two correct</b> choices and <b>no incorrect</b> choices.</p> <p><b>All correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One or two correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with some correct choices.</p>

Problem 8				Standard: MA.7.AR.3.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct choice:</b> 4%</p>			<p><b>Incorrect choice.</b></p> <p>Students who select 0.8% may have calculated the actual error in °C and not the percent error.</p> <p>Students who select 40% may have correctly calculated <math>\frac{0.8}{20}</math>, but did not correctly convert this to a percentage.</p> <p>Students who select 1.04% may have calculated <math>20.8 \div 20</math>.</p>	

Problem 9				Standard: MA.7.AR.3.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete</b> explanation. Less than \$50. Explanations vary. After a 10% tax, the rug costs \$55. Then after a 10% coupon, the rug costs \$49.50.</p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p>E.g., Response includes [x].</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b> of multistep percentage problems.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>	

Problem 10		Standards: MA.7.AR.3.1 and MTR.7.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>\$1297.60</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$261 may have solved the problem, "How much interest will be paid at the end of 3 years?"</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$27,600 may not have written the interest rate as a decimal.</p> <p>Students who write \$26,100 may not have written the interest rate as a decimal or added the interest to the initial amount of the loan.</p>	<p>Response shows <b>limited understanding</b>.</p>

Unit 6

**Show What You  
Know PDFs**



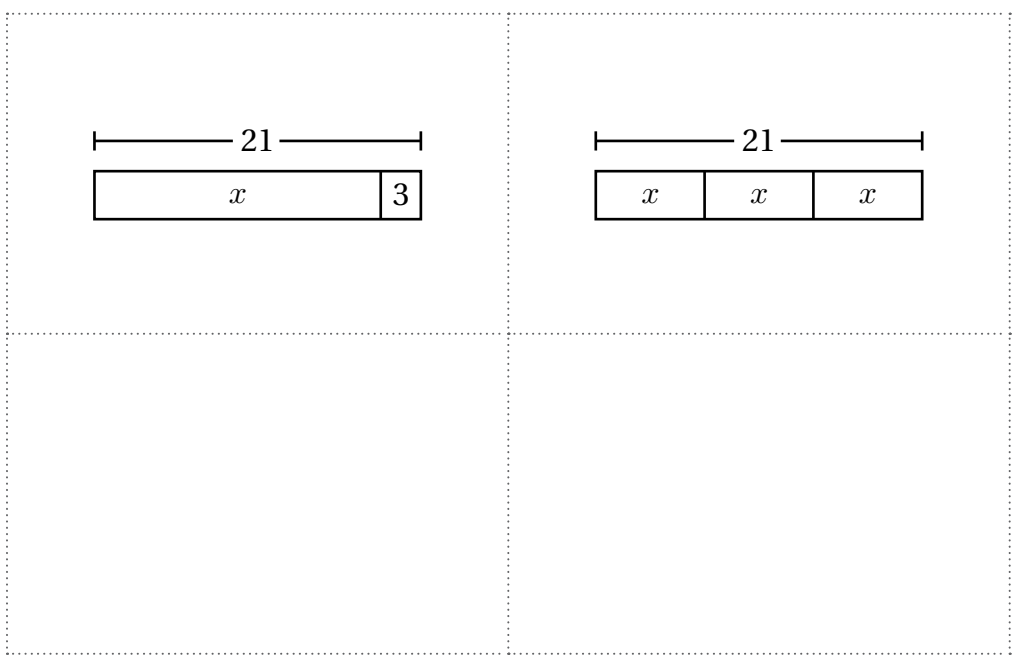
# Show What You Know



6.01

Match each equation to the tape diagram it represents.

$x + 3 = 21$      
  $x + x + x = 21$      
  $x = 18$      
  $3 \cdot x = 21$



**Show What You Know****6.02**

Yasmine is biking 5 miles to her friend's house. After she bikes 2 miles, she has  $x$  miles left to go.

**a** Which equation represents this situation?

**A.**  $2 + x = 5$

**B.**  $2x = 5$

**C.**  $x = 5 + 2$

**D.**  $5 \cdot 2 = x$

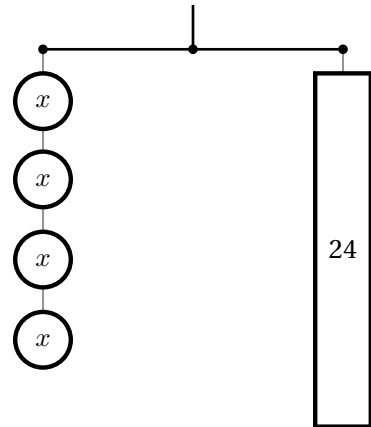
**b** What is the solution to the equation you chose?

**c** What is the solution's meaning in this situation?

**Show What You Know****6.03**

Here is a balanced hanger.

- a** Which equation does this hanger represent?
- A.**  $24 + 4 = x$       **B.**  $4x = 24$
- C.**  $x \div 4 = 24$       **D.**  $4 + x = 24$
- b** What is the value of  $x$  that balances the hanger?





# Show What You Know

**6.05**

Find the value of  $y$  for each equation. Show your thinking.

**a**  $\frac{2}{3}y = \frac{3}{2}$

**b**  $y + 10.2 = 12.1$

**Show What You Know****6.06**

Oranges cost \$2 per pound.

- a** What is the cost of  $x$  pounds of oranges?
- A.** 2
  - B.**  $x + 2$
  - C.**  $2x$
  - D.**  $x + 4$
- b** What is the cost of 6 pounds of oranges?

**Show What You Know****6.07**

Select *all* the expressions that are equivalent to  $2n + 4$ .

Use the image if it helps with your thinking.

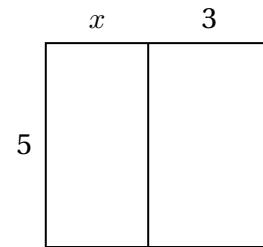
$n$	$1$	$1$
$n$	$1$	$1$

- A.  $n + n + 1 + 1 + 1 + 1$
- B.  $2n + 2n + 4$
- C.  $(n + 2) + (n + 2)$
- D.  $(n + 4) + (n + 4)$
- E.  $(2n + 1) + (2n + 1)$

**Show What You Know****6.08**

Select *all* the expressions that represent the area of the rectangle.

- A.  $3(5 + x)$
- B.  $5(x + 3)$
- C.  $5x + 15$
- D.  $5x + 3$
- E.  $5 + x + 3$



## Show What You Know



6.09

Write an expression that is equivalent to  $2x + 4(x + 3)$ .

**Show What You Know****6.10**

Group the equivalent expressions.

$4 \cdot 6$

$6^4$

$6^3 \cdot 6$

$6 \cdot 6 \cdot 6 \cdot 6$

$6 + 6 + 6 + 6$

# Show What You Know

**6.11**

Determine the value of each expression. Show your thinking.

**a**  $2 \cdot 4^2$

**b**  $10 + (4 - 3)^2$

## Show What You Know



6.12

The number of fish in a pond decreased by 10% this year compared to last year.

Last year, there were 60 fish in the pond.

How many fish are in the pond this year?

## Show What You Know



6.13

Jayla's bank account increased by 7% this year.

Write an equation to represent the relationship between the amount that Jayla started with,  $b$ , and the amount she has now,  $c$ .

## Show What You Know

**6.14**

A company's new container holds 40% more laundry soap. If the original container held 53 fluid ounces of soap, how much does the new container hold? Show or explain your thinking.

## Show What You Know



6.15

A meal's bill is \$30 before tax and tip.

A 7% sales tax is applied, followed by a 20% tip (on the after-tax amount).

What is the total after tax and tip?

<b>Bill:</b>	\$30.00
<b>7% Tax:</b>	\$
<b>Total Before Tip:</b>	\$
<b>20% Tip:</b>	\$
<b>Total After Tip:</b>	\$???.??



## Show What You Know



6.17


An egg is labeled as “jumbo egg” if it weighs 2.5 ounces.

Jamya buys a carton of jumbo eggs and finds that one egg weighs 2.4 ounces.

What is the percent error?

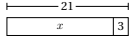
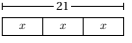
### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.01**

Match each equation to the tape diagram it represents.


$x + 3 = 21$      $x + x + x = 21$      $x = 18$      $3 \cdot x = 21$

	
$x + 3 = 21$ $x = 18$	$x + x + x = 21$ $3 \cdot x = 21$

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### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.02**

Yasmine is biking 5 miles to her friend's house. After she bikes 2 miles, she has  $x$  miles left to go.

a Which equation represents this situation?

A.  $2 + x = 5$      B.  $2x = 5$      C.  $x = 5 + 2$      D.  $5 + 2 = x$

b What is the solution to the equation you chose?

$x = 3$


c What is the solution's meaning in this situation?

Responses vary. Yasmine has 3 miles left to go before she gets to her friend's house.

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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.03**

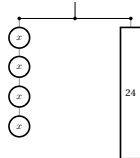
Here is a balanced hanger.

a Which equation does this hanger represent?

A.  $24 + 4 = x$      B.  $4x = 24$   
 C.  $x \div 4 = 24$      D.  $4 + x = 24$

b What is the value of  $x$  that balances the hanger?


$x = 6$



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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.04**

Kyleigh's dog eats 3.75 cups of dog food in a day. After  $d$  days, he has eaten 42 cups of dog food.

The equation  $3.75d = 42$  can be used to represent this situation.

a Describe the meaning of  $d$  in this situation.

Explanations vary.  $d$  represents how many days it takes Kyleigh's dog to eat 42 cups of dog food.

b Solve the equation for  $d$ .

$d = 11.2$


c What is the meaning of the solution?

Explanations vary. It will take Kyleigh's dog 11.2 days to eat 42 cups of dog food.

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Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.05**

Find the value of  $y$  for each equation. Show your thinking.


a  $\frac{2}{3}y = \frac{3}{2}$   
 $2\frac{1}{4}$  (or equivalent)

b  $y + 10.2 = 12.1$   
 $1.9$  (or equivalent)

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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.06**

Oranges cost \$2 per pound.


a What is the cost of  $x$  pounds of oranges?  
 A. 2  
 B.  $x + 2$   
 C.  $2x$   
 D.  $x + 4$

b What is the cost of 6 pounds of oranges?  
 $\$12$

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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.07**

Select all the expressions that are equivalent to  $2n + 4$ .  
 Use the image if it helps with your thinking.


$n$	$1$	$1$
$n$	$1$	$1$

A.  $n + n + 1 + 1 + 1 + 1$   
 B.  $2n + 2n + 4$   
 C.  $(n + 2) + (n + 2)$   
 D.  $(n + 4) + (n + 4)$   
 E.  $(2n + 1) + (2n + 1)$

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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.08**

Select all the expressions that represent the area of the rectangle.


$x$	$3$
$5$	

A.  $3(5 + x)$   
 B.  $5(x + 3)$   
 C.  $5x + 15$   
 D.  $5x + 3$   
 E.  $5 + x + 3$

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Show What You Know **Lesson 9**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.09**

Write an expression that is equivalent to  $2x + 4(x + 3)$ .  
 **$6x + 12$  (or equivalent)**

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Show What You Know **Lesson 10**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.10**

Group the equivalent expressions.


$4 \cdot 6$     $6^4$     $6^3 \cdot 6$     $6 \cdot 6 \cdot 6 \cdot 6$     $6 + 6 + 6 + 6$

Group 1	Group 2
$4 \cdot 6$ $6 + 6 + 6 + 6$	$6^4$ $6 \cdot 6 \cdot 6 \cdot 6$ $6^3 \cdot 6$

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Show What You Know **Lesson 11**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.11**


Determine the value of each expression. Show your thinking.

a)  $2 \cdot 4^2 = 32$       b)  $10 + (4 - 3)^2 = 11$

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Show What You Know **Lesson 12**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_


**Show What You Know**  **6.12**

The number of fish in a pond decreased by 10% this year compared to last year. Last year, there were 60 fish in the pond. How many fish are in the pond this year?  
**54 fish**

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Show What You Know Lesson 13

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  6.13

Jayla's bank account increased by 7% this year.

Write an equation to represent the relationship between the amount that Jayla started with,  $b$ , and the amount she has now,  $c$ .

**Responses vary.**


- $1b + 0.07b = c$
- $1.07b = c$
- $c = (1 + 0.07)b$

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Show What You Know Lesson 14


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  6.14

A company's new container holds 40% more laundry soap. If the original container held 53 fluid ounces of soap, how much does the new container hold? Show or explain your thinking.

**74.2 fluid ounces. Explanations vary. 53 fluid ounces represents the original 100%. I multiplied 53 by 1.4 to determine how much the new container holds.**

Soap (fl.oz) 


% of Soap Old Bottle Holds 

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Show What You Know Lesson 15

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  6.15

A meal's bill is \$30 before tax and tip.

A 7% sales tax is applied, followed by a 20% tip (on the after-tax amount).

What is the total after tax and tip?

**\$38.52**


Bill:	\$30.00
7% Tax:	\$
Total Before Tip:	\$
20% Tip:	\$
Total After Tip:	\$??.??

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Show What You Know Lesson 16

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  6.16

1. You deposit \$250 into an account that pays 4% simple interest.


- If you leave the money in the account for 4 years, how much interest will your original deposit earn?  
**\$37.50**
- How much money will be in your account?  
**\$287.50**

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Show What You Know Lesson 17

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **6.17**

An egg is labeled as "jumbo egg" if it weighs 2.5 ounces.

Jamya buys a carton of jumbo eggs and finds that one egg weighs 2.4 ounces.

What is the percent error?

**4%**

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# Unit 7

## **Assessments and Rubrics**



# Pre-Unit Check

## Unit 7

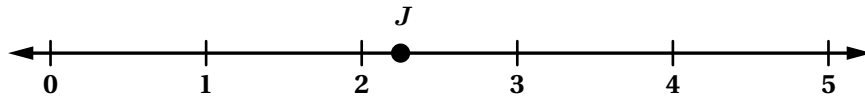
1. Adnan and Alexis leave the post office at the same time. Adnan walks 50 feet in one direction and Alexis walks 30 feet in the opposite direction.

If they turn to wave at each other, how far apart are they?



Explain or show your reasoning.

2. Select *all* the numbers that could represent point *J* on the number line.



- A.  $\frac{2}{3}$
- B. 2.3
- C.  $\frac{7}{3}$
- D. 2.25
- E.  $\frac{3}{2}$

3. Write each point on the number line as a fraction and as a decimal.

Point	On the Number Line	As a Fraction	As a Decimal
a <i>P</i>			
b <i>Q</i>			

**Pre-Unit Check (continued)**

**Unit 7**

4. Complete each number sentence with the symbol  $<$ ,  $>$ , or  $=$ .

a  $\frac{4}{3}$  .....  $\frac{3}{4}$

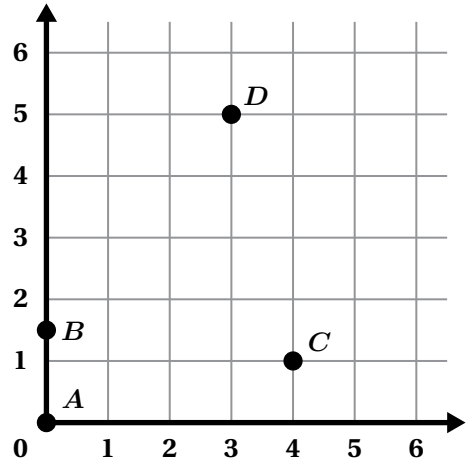
b  $1.5$  .....  $\frac{3}{2}$

c  $\frac{4}{5}$  .....  $\frac{4}{7}$

d  $1.41$  .....  $1.5$

5. Write the coordinates of each point in the table.

Point	Coordinates
A	(0, 0)
B	
C	
D	

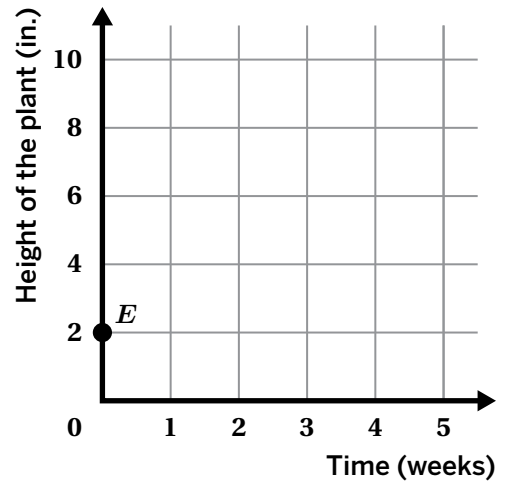


6. Sneha tracked the height of a plant as it grew from week to week.

a After one week, the plant was 4 inches tall. Plot and label this point *F*.

b After two weeks, the plant was 5 inches tall. Plot and label this point *G*.

c What does point *E* tell us about the plant?



**Sub-Unit Quiz****Unit 7**

1. If the following numbers were plotted on a number line, which would be farthest to the *left*?

A. -2

B.  $-1\frac{3}{4}$

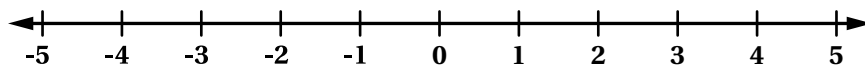
C.  $\frac{11}{4}$

D.  $-\frac{11}{4}$

2. Here are two numbers: -4 and  $\frac{8}{3}$ .

On the number line, plot and label:

- Each number.
- The opposite of each number.



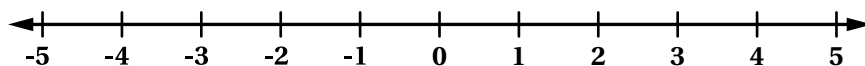
3. Complete each number sentence with the symbol  $<$ ,  $>$ , or  $=$ . Use the number line if it helps with your thinking.

a  $|2|$  ..... -2

b  $|-3|$  ..... -2.5

c  $-\frac{2}{3}$  .....  $\frac{3}{2}$

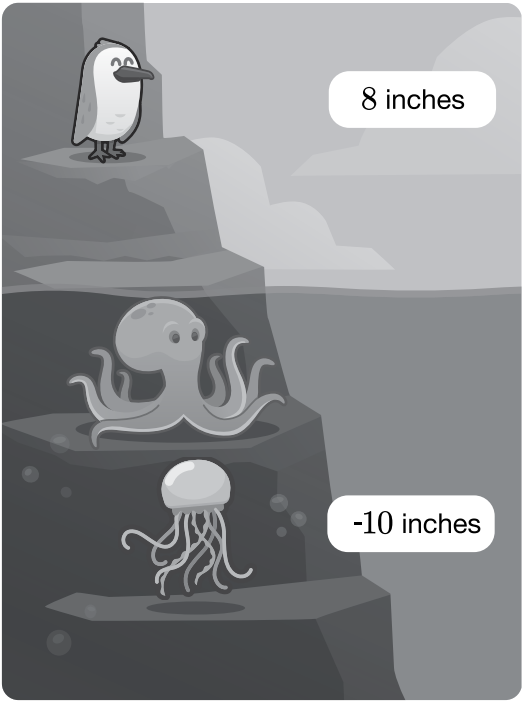
d  $-\frac{5}{2}$  .....  $-\frac{2}{5}$



**Sub-Unit Quiz (continued)**

**Unit 7**

4. Here is a snapshot of some creatures on the coast. The surface of the water has an elevation of 0 inches.



a The octopus is under the water above the jellyfish. What could be the elevation of the octopus?

b Which creature's elevation has the greatest absolute value?

Explain how you know.

c Here are elevations of three other creatures.

Andean condor: 800 feet	Anglerfish: -2,000 feet	Giant squid: -1,600 feet
-------------------------	-------------------------	--------------------------

Order their elevations from *highest* to *lowest*.

--	--	--

**Highest Elevation**

**Lowest Elevation**

5. Decide if each statement is always, sometimes, or never true. Circle one.

a The absolute value of a number is negative.  
 Always                  Sometimes                  Never

Explain your reasoning.

b A number and its opposite have the same absolute value. Circle one.

Always                  Sometimes                  Never

Explain your reasoning.

Standard	MA.6.NSO.1.1	MA.6.NSO.1.2	MA.6.NSO.1.3	MA.6.NSO.1.4
Problem(s)	1, 3	2, 4a, 4b	1, 4c, 5	4b, 5

Problem 1		Standards: MA.6.NSO.1.1, MA.6.NSO.1.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> $-\frac{11}{4}$			<p>Incorrect choice.</p>

Problem 2		Standard: MA.6.NSO.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Student correctly graphs the numbers -4 and <math>\frac{8}{3}</math> and one of the opposites.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Student correctly graphs the numbers -4 and <math>\frac{8}{3}</math> but not the opposites.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 3		Standard: MA.6.NSO.1.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct responses:</p> <ul style="list-style-type: none"> <li>a &gt;</li> <li>b &gt;</li> <li>c &lt;</li> <li>d &lt;</li> </ul>	<p>Three out of the four responses are <b>correct</b>.</p>	<p>Two out of the four responses are <b>correct</b>.</p>	<p>One or zero out of the four responses are <b>correct</b>.</p>

Problem 4a			
Standard: MA.6.NSO.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>Responses vary. Any elevation less than 0 inches and greater than -10 inches.</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write -10 may have thought they should give the elevation of the jellyfish.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b			
Standards: MA.6.NSO.1.2, MA.6.NSO.1.4, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Jellyfish. Explanations vary. The absolute value is a number's distance from 0. In this situation, 0 inches represents the surface of the water and the jellyfish is the farthest away from the surface of the water.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>E.g., Response says the bird has the greatest absolute value because it is a positive number.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Response says the octopus has the greatest absolute value because it is closest to 0.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4c			
Standard: MA.6.NSO.1.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> responses:</p> <p><b>From highest to lowest elevation:</b></p> <ul style="list-style-type: none"> <li>• Andean condor: 800 feet</li> <li>• Giant squid: -1,600 feet</li> <li>• Anglerfish: -2,000 feet</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Students reverse the order.</p> <ul style="list-style-type: none"> <li>• Anglerfish: -2,000 feet</li> <li>• Giant squid: -1,600 feet</li> <li>• Andean condor: 800 feet</li> </ul>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Students switch the order of -1,600 and -2,000.</p> <ul style="list-style-type: none"> <li>• Andean condor: 800 feet</li> <li>• Anglerfish: -2,000 feet</li> <li>• Giant squid: -1,600 feet</li> </ul>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5a			
Standards: MA.6.NSO.1.3, MA.6.NSO.1.4, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Never. Explanations vary. The absolute value is a number's distance from 0. Distances aren't negative, so absolute value can't be negative.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Student selects <i>Sometimes</i> because the value inside the absolute value bars can be negative.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

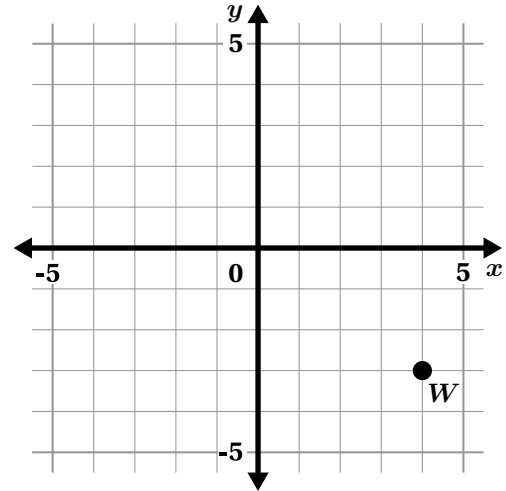
Problem 5b			
Standards: MA.6.NSO.1.3, MA.6.NSO.1.4, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Always. Explanations vary. The absolute value is a number's distance from 0. Opposites are always the same distance away from 0, so their absolute values are the same.</i></p>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Student selects <i>Sometimes</i> because the value inside the absolute value bars can be positive and negative.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

## Unit 7

1. Which are the coordinates of point  $W$ ?

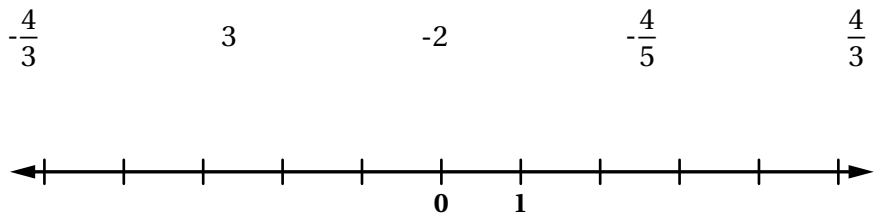
- A.  $(-3, 4)$
- B.  $(4, -3)$
- C.  $(-4, 3)$
- D.  $(3, -4)$



2. What is the value of  $12 + 6 - 4\left(\frac{10}{5} - 7\right)^2$ ?

- A. -82
- B. -46
- C. 58
- D. 118

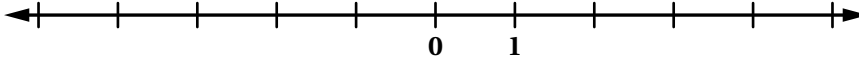
3. Plot and label these numbers on the number line:



**End-of-Unit Assessment** (continued)**Unit 7**

4. Complete each number sentence with the symbol  $<$ ,  $>$ , or  $=$ .

Use the number line if it helps with your thinking.



a  $\frac{3}{2}$  .....  $-\frac{3}{2}$

b  $|-5|$  .....  $|-4.5|$

c  $-\frac{5}{3}$  .....  $-\frac{3}{5}$

d  $|-5|$  .....  $5$

5. Solve each equation.

a  $8n = 72$

b  $t - 11 = -17$

c  $p + 5 = 12$

d  $\frac{a}{4} = -3$

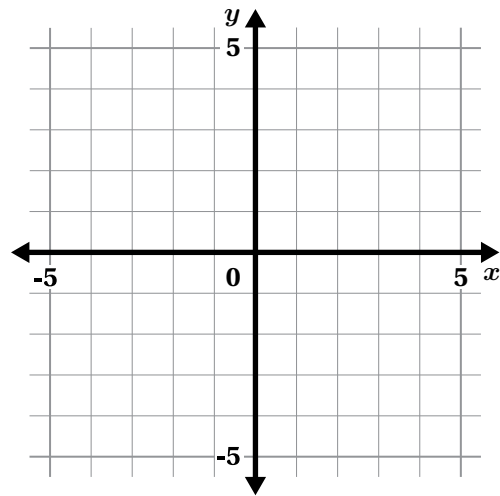
## End-of-Unit Assessment (continued)

### Unit 7

6. Here are four points.

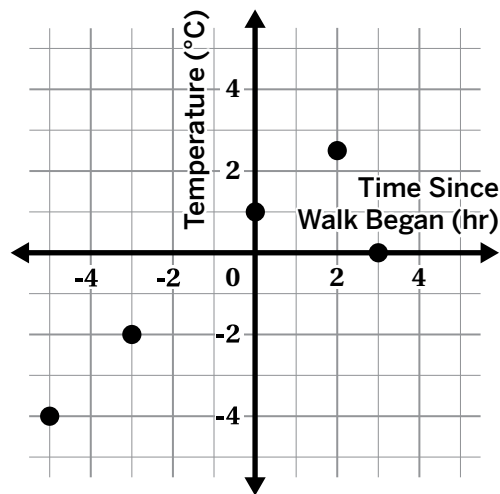
- $A(2, 4)$
- $B(2, -3)$
- $C(-3, 0)$
- $D(-3, 2)$

- a Plot and label each point.
- b What is the length of the segment between  $A$  and  $B$ ? Connect the points if it helps with your thinking.



7. On Saturday, Aba went for a walk and made a graph of the temperature outside at different times. She started her walk at time 0.

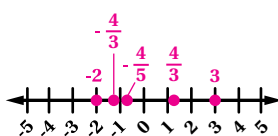
- a What was the temperature outside when Aba started her walk?
- b The point  $(-5, -4)$  is on Aba's graph. What does this point tell us?
- c Aba walked for 4 hours. When Aba ended her walk, it was  $-2^{\circ}\text{C}$  outside. Add this point to her graph.
- d Write coordinates for a new point that would *not* make sense in this situation. Explain how you know it doesn't make sense.



Standard	MA.6.NSO.1.1	MA.6.NSO.1.2	MA.6.NSO.1.3	MA.6.GR.1.1	MA.6.GR.1.3	MA.7.NSO.2.1	MA.7.NSO.2.2	MA.6.AR.2.2	MA.6.AR.2.3
Problem(s)	1, 3, 6a, 7	7	4	6a, 6b, 7d	6b	2	5a, 5b, 5c, 5d	5b, 5c	5a, 5d

Problem 1				Standard: MA.6.NSO.1.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p>(4, -3)</p>			<p><b>Incorrect choice.</b></p> <p>Students who select (-3, 4) may understand that <math>W</math> is represented by positive 4 and -3, but transposed the <math>x</math>- and <math>y</math>-coordinates.</p> <p>Students who select (-4, 3) may recognize that the <math>x</math>-coordinate is first and the <math>y</math>-coordinate is second in an ordered pair, but they switched the positive and negative directions on the axes.</p>	

Problem 2				Standard: MA.7.NSO.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>-82</p>			<p><b>Incorrect choice.</b></p> <p>Students who select one of the other choices may have difficulty following the order of operations.</p>	

Problem 3				Standard: MA.6.NSO.1.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> 	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Four</b> of the five values on the number line are <b>correct</b>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p><b>Two or three</b> of the five values on the number line are <b>correct</b>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>Zero or one</b> of the five values on the number line are <b>correct</b>.</p>	

Problem 4 <span style="float: right;">Standards: MA.6.NSO.1.3, MTR.3.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct responses:</p> <ul style="list-style-type: none"> <li>a &gt;</li> <li>b &gt;</li> <li>c &lt;</li> <li>d =</li> </ul>	<p>Three out of the four responses are <b>correct</b>.</p>	<p>Two out of the four responses are <b>correct</b>.</p>	<p>Zero or one out of the four responses are <b>correct</b>.</p>

Problem 5a <span style="float: right;">Standards: MA.7.NSO.2.2, MA.6.AR.2.3, MTR.3.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>n = 9</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b <span style="float: right;">Standards: MA.7.NSO.2.2, MA.6.AR.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>t = -6</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c <span style="float: right;">Standards: MA.7.NSO.2.2, MA.6.AR.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>p = 7</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5d		Standards: MA.7.NSO.2.2, MA.6.AR.2.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>a = -12</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6a		Standards: MA.6.NSO.1.1, MA.6.GR.1.1, MTR.5.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Three of the four points are plotted correctly.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Two of the four points are plotted correctly.</p> <p>E.g., Response reverses the <math>x</math>- and <math>y</math>-coordinates for each point.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Zero or one of the four points are plotted correctly.</p>

Problem 6b		Standards: MA.6.GR.1.1, MA.6.GR.1.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p>7 units</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 1 may have added 4 and -3.</p> <p>Students who write 6 may have counted the number of lattice points between <math>A</math> and <math>B</math>.</p> <p>Students who write 8 may have counted lattice points and included the endpoints.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7a		Standards: MA.6.NSO.1.1, MA.6.NSO.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>1°C</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write that the temperature was 3° outside may have recognized that one coordinate is 0 but used the point (3, 0) instead of (0, 1).</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b		Standards: MA.6.NSO.1.1, MA.6.NSO.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>Responses vary. 5 hours before Aba's walk began, it was -4°C outside.</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who do not interpret -5 as 5 hours before Aba's walk may have struggled to interpret the negative value in context.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7c		Standards: MA.6.NSO.1.1, MA.6.NSO.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who plot the point at (-2, 4) may not have attended to the axis labels.</p>	<p>Response shows <b>limited understanding</b>.</p>

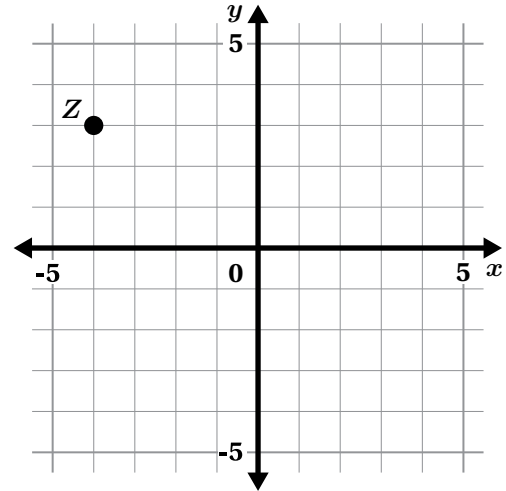
Problem 7d			
Standards: MA.6.NSO.1.1, MA.6.NSO.1.2, MA.6.GR.1.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• (2, 1) because it cannot be two different temperatures at the same time.</li> <li>• (1, 100) because 100°C doesn't make sense on a winter day.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

# End-of-Unit Assessment

## Unit 7

1. Which are the coordinates of point  $Z$ ?

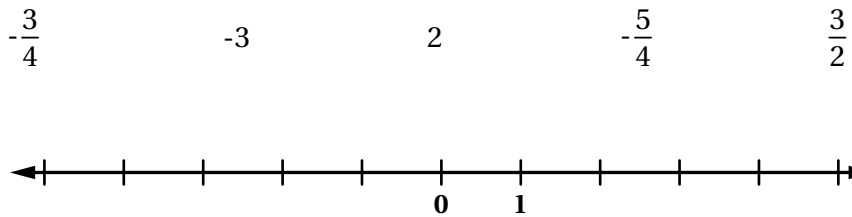
- A.  $(-3, 4)$
- B.  $(4, -3)$
- C.  $(-4, 3)$
- D.  $(3, -4)$



2. What is the value of  $15 + |3 - 8| - 4^2$ ?

- A. -6
- B. -3
- C. 4
- D. 10

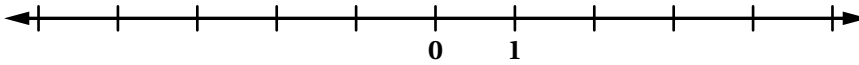
3. Plot and label these numbers on the number line:



**End-of-Unit Assessment (continued)****Unit 7**

4. Complete each number sentence with the symbol  $<$ ,  $>$ , or  $=$ .

Use the number line if it helps with your thinking.



a  $-\frac{1}{4} \dots \frac{1}{4}$

b  $|3| \dots |-3.5|$

c  $\frac{2}{3} \dots -\frac{3}{2}$

d  $4 \dots |4|$

5. Solve each equation.

a  $7n = 49$

b  $t - 13 = -20$

c  $p + 4 = 9$

c  $\frac{a}{3} = -6$

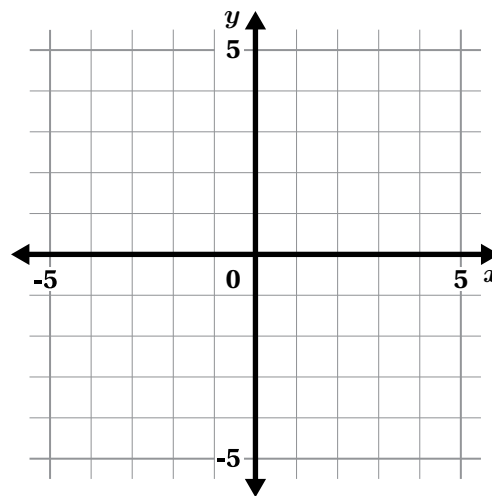
## End-of-Unit Assessment (continued)

### Unit 7

6. Here are four points.

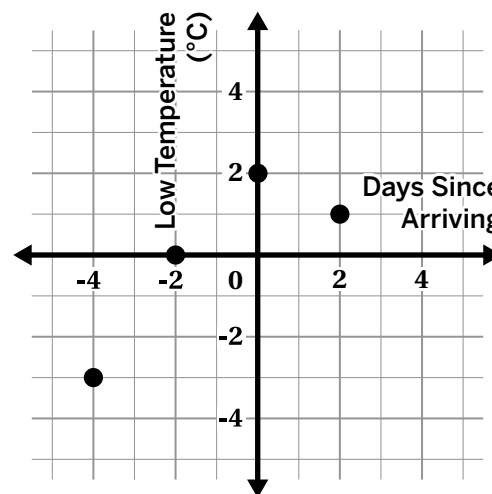
- $A(3, 2)$
- $B(-3, 2)$
- $C(0, -3)$
- $D(2, -3)$

- a Plot and label each point.
  
- b What is the length of the segment between  $A$  and  $B$ ? Connect the points if it helps with your thinking.



7. A scientist took a trip to Montreal, Canada. He made a graph of the low temperatures in Montreal.

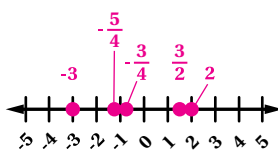
- a What was the low temperature the day he arrived?
  
- b The point  $(-4, -3)$  is on his graph. What does this point tell us?
  
- c 3 days after he arrived, the low temperature was  $-1^\circ\text{C}$ . Add this point to his graph.
  
- d Write coordinates for a new point that would *not* make sense in this situation. Explain how you know it doesn't make sense.



Standard	MA.6.NSO.1.1	MA.6.NSO.1.2	MA.6.NSO.1.3	MA.6.GR.1.1	MA.6.GR.1.3	MA.7.NSO.2.1	MA.7.NSO.2.2
Problem(s)	1, 3, 6a, 7	7	4	6a, 6b, 7d	6b	2	5a, 5b, 5c, 5d

Problem 1		Standard: MA.6.NSO.1.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>(-4, 3)</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select (3, -4) may understand that <math>Z</math> is represented by -4 and 3, but transposed the <math>x</math>- and <math>y</math>-coordinates.</p> <p>Students who select (4, -3) may recognize that the <math>x</math>-coordinate is first and the <math>y</math>-coordinate is second in an ordered pair, but they switched the positive and negative directions on the axes</p>

Problem 2		Standard: MA.7.NSO.2.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>4</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select one of the other choices may have difficulty following the order of operations.</p>

Problem 3		Standard: MA.6.NSO.1.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> 	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Four</b> of the five values on the number line are <b>correct</b>.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p><b>Two or three</b> of the five values on the number line are <b>correct</b>.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>Zero or one</b> of the five values on the number line are <b>correct</b>.</p>

Problem 4 <span style="float: right;">Standards: MA.6.NSO.1.3, MTR.3.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct responses:</p> <ul style="list-style-type: none"> <li>a &lt;</li> <li>b &lt;</li> <li>c &gt;</li> <li>d =</li> </ul>	<p>Three out of the four responses are <b>correct</b>.</p>	<p>Two out of the four responses are <b>correct</b>.</p>	<p>Zero or one out of the four responses are <b>correct</b>.</p>

Problem 5a <span style="float: right;">Standards: MA.7.NSO.2.2, MTR.3.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>n = 7</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b <span style="float: right;">Standard: MA.7.NSO.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>t = -7</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c <span style="float: right;">Standard: MA.7.NSO.2.2</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>p = 5</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5d		Standard: MA.7.NSO.2.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response.</p> <p><math>a = -18</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6a		Standards: MA.6.NSO.1.1, MA.6.GR.1.1, MTR.5.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Three</b> of the four points are plotted correctly.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p><b>Two</b> of the four points are plotted correctly.</p> <p>E.g., Response reverses the <math>x</math>- and <math>y</math>-coordinates for each point.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>Zero or one</b> of the four points are plotted correctly.</p>

Problem 6b		Standards: MA.6.GR.1.1, MA.6.GR.1.3	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> <p><b>6 units</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 5 may have counted the number of lattice points in between <math>A</math> and <math>B</math>.</p> <p>Students who write 7 may have counted lattice points and included the endpoints.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7a			
Standards: MA.6.NSO.1.1, MA.6.NSO.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>2°C</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write that the low temperature was -2° may have recognized that one coordinate is 0 but used the point (-2, 0) instead of (0, 2).</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7b			
Standards: MA.6.NSO.1.1, MA.6.NSO.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>Responses vary. 4 days before Nicolas arrived, the low temperature was -3°C.</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who do not interpret -4 as 4 days before the scientist arrived may have struggled to interpret the negative value in context.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7c			
Standards: MA.6.NSO.1.1, MA.6.NSO.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who plot the point at (-1, 3) may not have attended to the axis labels.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 7d			
Standards: MA.6.NSO.1.1, MA.6.NSO.1.2, MA.6.GR.1.1, MTR.4.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Responses vary.</i></p> <ul style="list-style-type: none"> <li>• (0, 3) because there cannot be two different lowest temperatures on the same day.</li> <li>• (1, 100) because 100°C isn't a reasonable temperature.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete</b> explanation.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>



Unit 7

**Show What You  
Know PDFs**



# Show What You Know

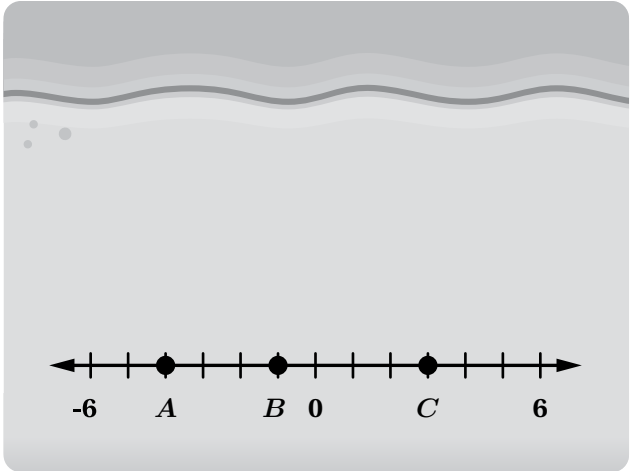


7.01

Here are three points:  $A$ ,  $B$ , and  $C$ .

Determine each point's location on the number line.

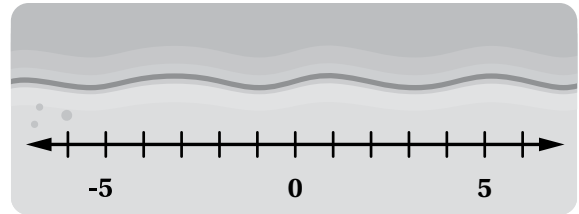
Point	Location
$A$	
$B$	
$C$	



**Show What You Know****7.02**

Here is a number line.

- a** Plot point  $P$  at  $-4$ .
- b** Plot point  $Q$  at  $-\frac{5}{2}$ .
- c** Plot point  $R$  at the opposite of  $Q$ .



# Show What You Know



7.03

Order these elevations from *highest* to *lowest*.

8 meters                      -5 meters                      0 meters                      -12 meters

<b>Highest Elevation</b>	
<b>Lowest Elevation</b>	

# Show What You Know



7.04

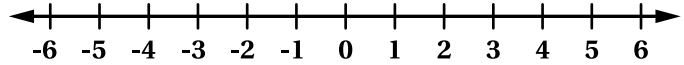
Order these numbers from *least* to *greatest*.

-3	3.1	-2.5	2.5	0.25
----	-----	------	-----	------

--	--	--	--	--

Least

Greatest

**Show What You Know****7.05**Select *all* the true statements.

Use the number line if it helps with your thinking.

- A.  $-4 < -3$
- B.  $|-4| < -3$
- C.  $-4 < |-3|$
- D.  $|-4| < |-3|$
- E.  $|-3| < |-4|$

**Show What You Know****7.06**

Here are some elevations measured in three U.S. cities.

- a** Which city has an elevation closest to sea level (0 feet)?

City	Elevation (ft)
Death Valley, CA	-282
Tallahassee, FL	203
Westmorland, CA	-157

- b** Which city is at the highest elevation?

# Show What You Know

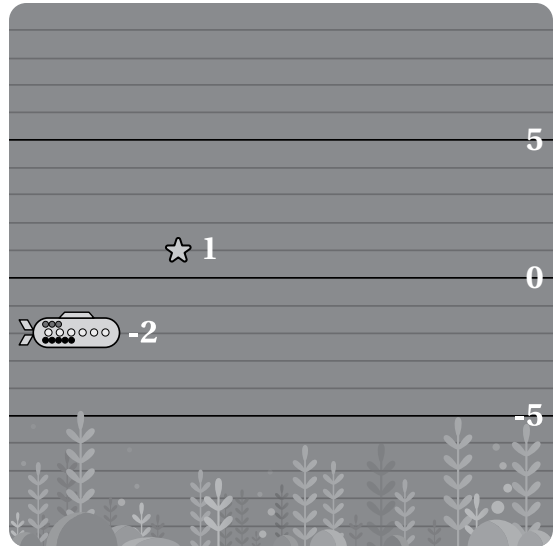


7.07

This submarine's starting position is at -2 units.

Select *all* the actions that would make the final position 1 unit.

- A. Add 3 floats
- B. Add 3 anchors
- C. Remove 3 floats
- D. Remove 3 anchors
- E. Add 1 float and remove 2 anchors
- F. Remove 2 floats and add 1 anchor



**Show What You Know****7.08**

Determine the value of each expression.

Expression	Value
$5 - 2$	
$2 - 5$	
$-5 + (-2)$	
$-2 - (-5)$	

## Show What You Know

**7.09**

The price of a computer falls \$8 each day.

Write an expression that can be used to find the value the computer loses after 5 days.

How much value did the computer lose after 5 days?

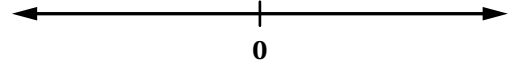
The computer's value has fallen by \$72. Write an expression that can be used to find the number of days that have passed.

How many days have passed?

**Show What You Know****7.10**

Determine the value of the variable that makes each equation true. Use the number line if it helps with your thinking.

**a**  $10 + a = 3$

 $a = \dots\dots\dots$ 

**b**  $1.9 + b = -3.2$

 $b = \dots\dots\dots$ 

**c**  $-\frac{1}{6} + \frac{7}{6} = c$

 $c = \dots\dots\dots$

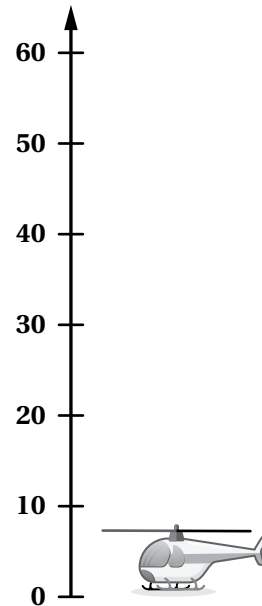
**Show What You Know****7.11**

A helicopter just landed. It was traveling downward at a rate of 1.8 meters per second.

Select the equation that represents the helicopter's position 30 seconds ago.

- A.  $(-1.8)(-30) = -54$
- B.  $(-1.8)(-30) = 54$
- C.  $(-1.8)(30) = -54$
- D.  $(-1.8)(30) = 54$

Explain your thinking.



**Show What You Know****7.12**

Select the *two* expressions that have the same value.

A.  $-20 \cdot (-4)$

B.  $-\frac{20}{4}$

C.  $\frac{-20}{-4}$

D.  $\frac{20}{-4}$

E.  $-20 \cdot 4$

**Show What You Know****7.13**

Seth was asked to evaluate  $(6 - 9)^3 + 3 \div 2$ . His work is shown below. Do you agree with his work? Explain your thinking.

$$\begin{aligned} &(-3)^3 + 3 \div 2 \\ &-27 + 3 \div 2 \\ &-24 \div 2 \\ &-12 \end{aligned}$$

**Show What You Know****7.14**

Determine whether these expressions are equivalent. Explain your reasoning.

$$\frac{2}{3}(3x - 6) + 4 \text{ and } \frac{1}{2}(12x + 6) - 4x$$

# Show What You Know

**7.15**

Write each expression using the fewest number of terms.

**a**  $10x - 2x$

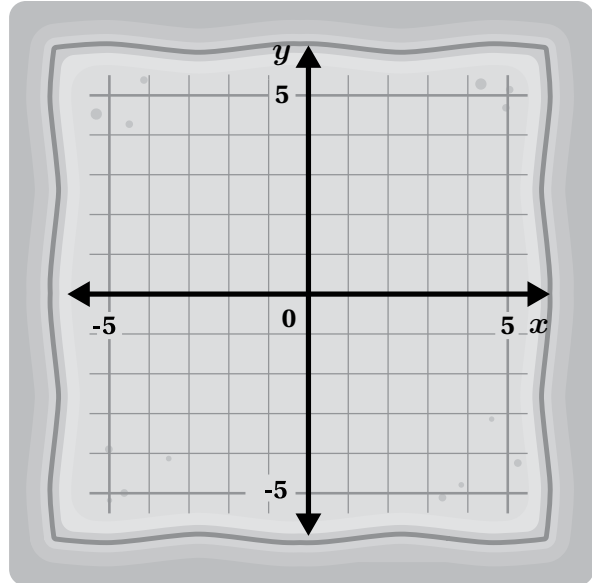
**b**  $18x - (7 + 4x)$

**Show What You Know****7.16**

There are sand dollars at the following locations:

$(-3, -4)$     $(1, -2)$     $(-5, 0)$

Plot and label a point to represent each location.



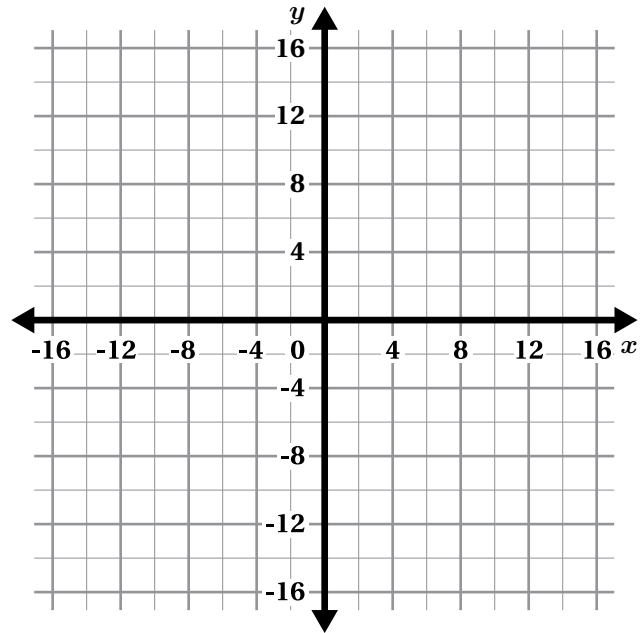
# Show What You Know



7.17

Plot and label each point on the graph.

$A(-10, 4)$      $B(-10, -4)$      $C(2, -6)$



# Show What You Know

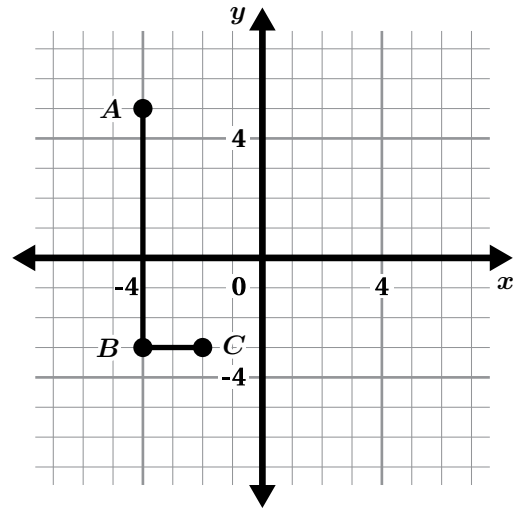


7.18

Here is an almost-complete rectangle.

- a** Write the coordinates of point  $D$  to complete the rectangle.

Point	Coordinates
$A$	$(-4, 5)$
$B$	$(-4, -3)$
$C$	$(-2, -3)$
$D$	



- b** What is the length of the segment that connects points  $A$  and  $B$ ?

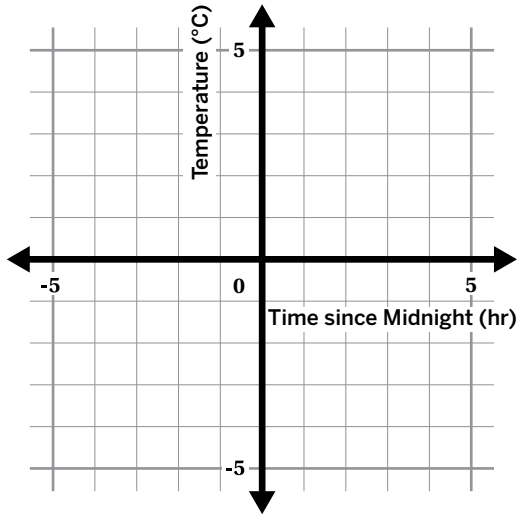
# Show What You Know



7.19

This table shows some times and temperatures for one day in a city in Illinois.

- a** Plot the first four points.




Time	Temperature
10:00 PM	3°C
Midnight	-2°C
1:00 AM	-3.5°C
2:30 AM	-3°C
4:00 AM	

- b** Write a temperature in the table for 4:00 AM and plot a point to represent it.

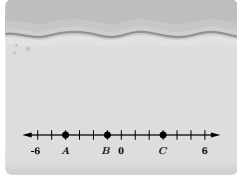
### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  7.01

Here are three points: *A*, *B*, and *C*.  
Determine each point's location on the number line.


Point	Location
<i>A</i>	-4
<i>B</i>	-1
<i>C</i>	3



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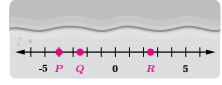
### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  7.02

Here is a number line.


- Plot point *P* at -4.
- Plot point *Q* at  $-\frac{5}{2}$ .
- Plot point *R* at the opposite of *Q*.  
Responses shown on the number line.



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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  7.03

Order these elevations from *highest* to *lowest*.


8 meters      -5 meters      0 meters      -12 meters

Highest Elevation	8 meters
	0 meters
	-5 meters
Lowest Elevation	-12 meters

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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  7.04

Order these numbers from *least* to *greatest*.

-3      3.1      -2.5      2.5      0.25


-3	-2.5	0.25	2.5	3.1
----	------	------	-----	-----

Least Greatest

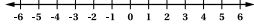
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Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.05**

Select all the true statements.




Use the number line if it helps with your thinking.

- A.  $-4 < -3$
- B.  $|-4| < -3$
- C.  $-4 < |-3|$
- D.  $|-4| < |-3|$
- E.  $|-3| < |-4|$

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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.06**

Here are some elevations measured in three U.S. cities.


City	Elevation (ft)
Death Valley, CA	-282
Tallahassee, FL	203
Westmorland, CA	-157

- a Which city has an elevation closest to sea level (0 feet)?  
**Westmorland, CA**
- b Which city is at the highest elevation?  
**Tallahassee, FL**

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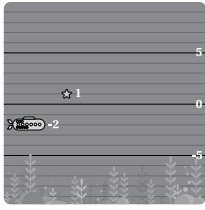
Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.07**

This submarine's starting position is at -2 units. Select all the actions that would make the final position 1 unit.


- A. Add 3 floats
- B. Add 3 anchors
- C. Remove 3 floats
- D. Remove 3 anchors
- E. Add 1 float and remove 2 anchors
- F. Remove 2 floats and add 1 anchor



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Show What You Know Lesson 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.08**


Determine the value of each expression.

Expression	Value
$5 - 2$	<b>3</b>
$2 - 5$	<b>-3</b>
$-5 + (-2)$	<b>-7</b>
$-2 - (-5)$	<b>3</b>

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Show What You Know **Lesson 9**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.09**

The price of a computer falls \$8 each day.

Write an expression that can be used to find the value the computer loses after 5 days.

$(-8) \cdot (-5)$

How much value did the computer lose after 5 days?

**\$40**

The computer's value has fallen by \$72. Write an expression that can be used to find the number of days that have passed.

$(-72) \div (-8)$


How many days have passed?

**9 days**

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Show What You Know **Lesson 10**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.10**

Determine the value of the variable that makes each equation true. Use the number line if it helps with your thinking.

a  $10 + a = 3$

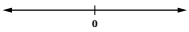
$a = \underline{\underline{-7}}$

b  $1.9 + b = -3.2$

$b = \underline{\underline{-5.1}}$

c  $\frac{1}{6} + \frac{7}{6} = c$


$c = \underline{\underline{\frac{8}{6}}}$  (or equivalent)



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Show What You Know **Lesson 11**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.11**

A helicopter just landed. It was traveling downward at a rate of 1.8 meters per second.

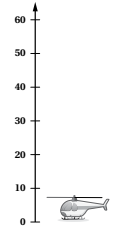
Select the equation that represents the helicopter's position 30 seconds ago.

A.  $(-1.8)(-30) = -54$

**B.  $(-1.8)(-30) = 54$**

C.  $(-1.8)(30) = -54$

D.  $(-1.8)(30) = 54$




Explain your thinking.

Explanations vary. The helicopter's rate can be represented using a negative number since it was moving downward to land. The time is also represented using a negative number since it refers to a time in the past. Multiplying two negative numbers has a positive value. In this case, this makes sense because 30 seconds ago, the helicopter would have still been in the air, so its position would be represented by a positive number.

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Show What You Know **Lesson 12**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **7.12**

Select the two expressions that have the same value.

A.  $-20 \cdot (-4)$

B.  $\frac{-20}{4}$

C.  $\frac{-20}{-4}$

D.  $\frac{20}{-4}$

E.  $-20 \cdot 4$

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Show What You Know Lesson 13

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.13

Seth was asked to evaluate  $(6 - 9)^3 + 3 \div 2$ . His work is shown below. Do you agree with his work? Explain your thinking.

$$\begin{aligned} &(-3)^3 + 3 \div 2 \\ &-27 + 3 \div 2 \\ &-24 \div 2 \\ &-12 \end{aligned}$$

Responses vary. No, Seth should have divided 3 by 2 and added the quotient to -27 to get a value of -25.5.

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Show What You Know Lesson 14

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.14

Determine whether these expressions are equivalent. Explain your reasoning.

$$\frac{2}{3}(3x - 6) + 4 \text{ and } \frac{1}{2}(12x + 6) - 4x$$

Solution: Explanations vary. No, these are not equivalent because the first expression simplifies to  $2x$  and the second expression simplifies to  $2x + 3$ .

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Show What You Know Lesson 15

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.15

Write each expression using the fewest number of terms.

a  $10x - 2x = 8x$       b  $18x - (7 + 4x) = 14x - 7$

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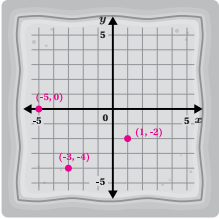
Show What You Know Lesson 16

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.16

There are sand dollars at the following locations:  
 $(-3, -4)$   $(1, -2)$   $(-5, 0)$

Plot and label a point to represent each location.



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Show What You Know Lesson 17

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.17

Plot and label each point on the graph.  
 $A(-10, 4)$   $B(-10, -4)$   $C(2, -6)$

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Show What You Know Lesson 18

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.18

Here is an almost-complete rectangle.

a Write the coordinates of point  $D$  to complete the rectangle.

Point	Coordinates
$A$	$(-4, 5)$
$B$	$(-4, -3)$
$C$	$(-2, -3)$
$D$	$(-2, 5)$

b What is the length of the segment that connects points  $A$  and  $B$ ?  
**8 units**

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Show What You Know Lesson 19

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 7.19

This table shows some times and temperatures for one day in a city in Illinois.

a Plot the first four points.

Time	Temperature
10:00 PM	$3^{\circ}\text{C}$
Midnight	$-2^{\circ}\text{C}$
1:00 AM	$-3.5^{\circ}\text{C}$
2:30 AM	$-3^{\circ}\text{C}$
4:00 AM	Responses vary.

b Write a temperature in the table for 4:00 AM and plot a point to represent it.  
**Responses vary.**

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# Unit 8

## **Assessments and Rubrics**



# Pre-Unit Check

## Unit 8

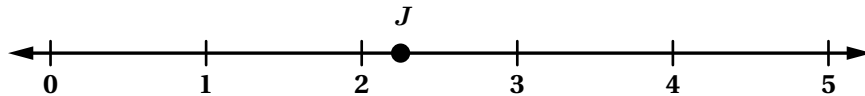
1. Adnan and Alexis leave the post office at the same time. Adnan walks 50 feet in one direction and Alexis walks 30 feet in the opposite direction.

If they turn to wave at each other, how far apart are they?



Explain or show your reasoning.

2. Select *all* the numbers that could represent point *J* on the number line.



- A.  $\frac{2}{3}$
- B. 2.3
- C.  $\frac{7}{3}$
- D. 2.25
- E.  $\frac{3}{2}$

3. Write each point on the number line as a fraction and as a decimal.

Point	On the Number Line	As a Fraction	As a Decimal
a <i>P</i>			
b <i>Q</i>			

### Pre-Unit Check (continued)

### Unit 8

4. Complete each number sentence with the symbol  $<$ ,  $>$ , or  $=$ .

a  $\frac{4}{3}$  .....  $\frac{3}{4}$

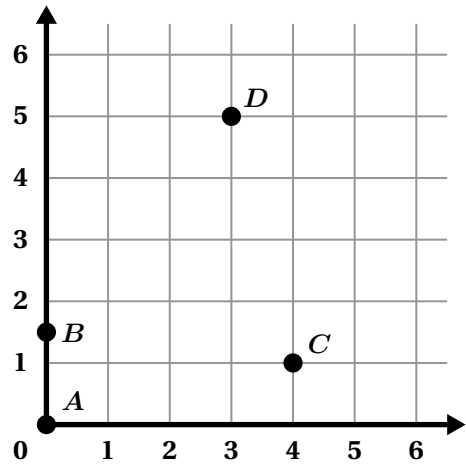
b  $1.5$  .....  $\frac{3}{2}$

c  $\frac{4}{5}$  .....  $\frac{4}{7}$

d  $1.41$  .....  $1.5$

5. Write the coordinates of each point in the table.

Point	Coordinates
A	(0, 0)
B	
C	
D	

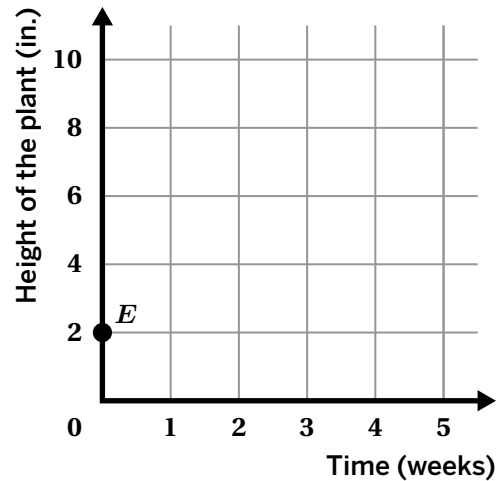


6. Sneha tracked the height of a plant as it grew from week to week.

a After one week, the plant was 4 inches tall. Plot and label this point  $F$ .

b After two weeks, the plant was 5 inches tall. Plot and label this point  $G$ .

c What does point  $E$  tell us about the plant?



# Sub-Unit Quiz

**Unit 8**

1. Which equation has a solution of -22?

A.  $x + 13 = 9$

B.  $d + 9 = -13$

C.  $a - 13 = -9$

D.  $n - 9 = 13$

2. Determine the value of the variable that makes each equation true.

a  $33 + b = 17$

b  $t - 4 = -3$

c  $-6 + s = 7$

d  $m + 8 = -4$

3. Solve each equation.

a  $-3 + a = 5$

b  $m - 9 = 9$

c  $7 + x = 1$

d  $y + 7 = -4$

**Sub-Unit Quiz** (continued)**Unit 8**

4. Solve each equation.


a  $3k = 21$


b  $-4g = 20$


c  $\frac{d}{3} = -2$


d  $\frac{p}{-5} = -7$


5. A mole starts digging at ground level. Ground level is represented as 0. The mole is digging at a rate of -2 inches per minute, which indicates digging deeper underground. The equation  $-2m = -28$  represents how many minutes,  $m$ , it will take the mole to reach 28 inches below ground level. How long will it take the mole to reach 28 inches below ground level?

 Standard	MA.6.AR.2.2	MA.6.AR.2.3
Problem(s)	1, 2a–d, 3a–d	4a–d, 5

Problem 1			 Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<b>Correct choice:</b> $d + 9 = -13$			<b>Incorrect choice.</b>

Problem 2a			 Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<b>Correct response:</b> $b = -16$	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding.</b>

Problem 2b			 Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<b>Correct response:</b> $t = 1$	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding.</b>

Problem 2c			 Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<b>Correct response:</b> $s = 13$	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding.</b>

Problem 2d				Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>m = -12</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3a				Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>a = 8</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3b				Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>m = 18</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3c				Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>x = -6</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 3d				Standard: MA.6.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>y = -11</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4a				Standard: MA.6.AR.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>k = 7</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4b				Standard: MA.6.AR.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>g = -5</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4c				Standard: MA.6.AR.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>d = -6</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

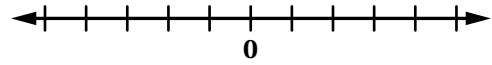
Problem 4d <span style="float: right;">Standard: MA.6.AR.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>p = 35</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5 <span style="float: right;">Standard: MA.6.AR.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><i>14 minutes</i></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>

# End-of-Unit Assessment

## Unit 8

1. Select *all* of the values of  $x$  that are solutions to the inequality  $x > -1.5$ .



Use the number line if it helps with your thinking.

- A. -5
  - B. -2
  - C. -1
  - D. 0
  - E. 2
2. People use salt to melt snow and ice. Salt only melts ice when the temperature is warmer than  $-10^{\circ}\text{C}$ .

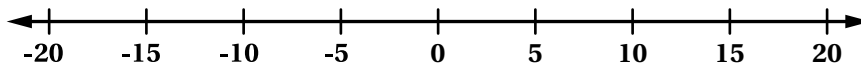
- a Which temperature is warmer? Circle one.

$-5^{\circ}\text{C}$                    $-10^{\circ}\text{C}$

Explain how you know.



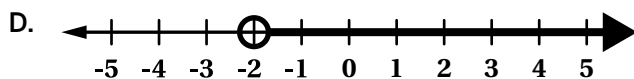
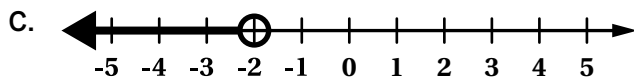
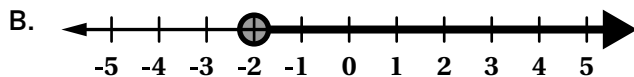
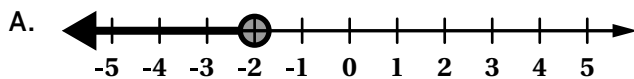
- b Graph all the temperatures at which salt melts ice.



- c Write an inequality to describe all the temperatures,  $t$ , at which salt melts ice.

**End-of-Unit Assessment** (continued)**Unit 8**

3. Which number line shows all of the values of  $x$  that make the inequality  $3x \leq -6$  true?



4. Parv has a \$50 gift card. He wants to buy  $n$  movies. Each movie costs \$3.99.

Which inequality describes how many movies Parv can buy?

A.  $3.99n > 50$

B.  $3.99n \leq 50$

C.  $3.99n \geq 50$

D.  $3.99n < 50$

5. Solve each equation.

a  $4(x + 2) = 40$

b  $-2x - 10 = -6$

**End-of-Unit Assessment** (continued)**Unit 8**

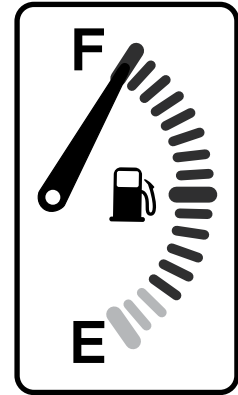
6. Joel's family car has a 14-gallon gas tank. The car uses about 0.5 gallons of gas each day.

- a If Joel's family starts with a full tank, can they drive the car for 15 days? Circle one.

Yes

No

Explain how you know.



- b Which expression describes the gallons of gas in the tank after  $d$  days?

A.  $14 - 0.5d$

B.  $14d - 0.5$

C.  $0.5 - 14d$

D.  $0.5d - 14$

Write an inequality that represents the number of days Joel's family can drive.


- c Solve the inequality you wrote.

Explain what the solutions mean in this situation.

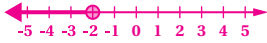
Standard	MA.5.AR.2.1	MA.6.NSO.1.2	MA.6.AR.1.2	MA.6.AR.2.1	MA.7.AR.3.3	MA.7.AR.2.1	MA.7.AR.2.2	MA.7.AR.2.3
Problem(s)	2c	2a	2b	1	6a, 6c	6b–c	5a–b	3, 4

Problem 1				Standard: MA.6.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>All correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>• -1</li> <li>• 0</li> <li>• 2</li> </ul>	<p>One or two correct choices and no incorrect choices.</p> <p>All correct choices and one incorrect choice.</p>	<p>One or two correct choices and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>	

Problem 2a				Standards: MA.6.NSO.1.2, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response and complete explanation.</p> <p><i>-5°C. Explanations vary. -5°C is higher than -10°C on a vertical number line, so it's warmer.</i></p>	<p>Correct response with minor flaws in explanation.</p> <p>Incorrect response with logical and complete explanation.</p>	<p>Correct response with incomplete explanation.</p> <p>Incorrect response with explanation that shows partial understanding.</p>	<p>Incorrect response with no explanation.</p>	

Problem 2b				Standard: MA.6.AR.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> 	<p>Response shows conceptual understanding with minor errors.</p> <p>Students who graph an open circle at 10 and shade to the right may not have noticed the negative sign.</p>	<p>Response shows incomplete understanding with significant errors.</p> <p>Students who shade the graph to the left may have considered the absolute value of the solutions.</p>	<p>Response shows limited understanding.</p>	

Problem 2c				Standard: MA.5.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><i><math>t &gt; -10</math> or <math>-10 &lt; t</math></i></p>	<p>Response shows conceptual understanding with minor errors.</p>	<p>Response shows incomplete understanding with significant errors.</p> <p>Students who write <math>t &lt; -10</math> may need support interpreting the inequality symbol.</p>	<p>Response shows limited understanding.</p>	

Problem 3			Standard: MA.7.AR.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> 			Incorrect choice.

Problem 4			Standards: MA.7.AR.2.3, MTR.6.1
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> $3.99n \leq 50$			Incorrect choice.

Problem 5a			Standard: MA.7.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> $x = 8$	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 12 may have divided both sides by 4 and then added 2 to each side instead of subtracting.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{38}{4}</math> may have subtracted 2 from each side as their first step or multiplied 4 only by the first term.</p> <p>Students who write 34 may have subtracted 4 from both sides as their first step.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b			Standard: MA.7.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> $x = -2$	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 2 may not have included the negative when writing their solution.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{2}</math> may have written <math>-12x = -6</math> as their first step.</p> <p>Students who write 8 may have subtracted 10 from both sides as their first step.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6a		Standards: MA.7.AR.3.3, MTR.6.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Yes. Explanations vary. Joel's family would use 7.5 gallons of gas in 15 days, so there would still be <math>14 - 7.5 = 6.5</math> gallons of gas left in the tank.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p> <p>Students who select <i>No</i> may have answered whether or not Joel's family has used all of their gas or if the warning light is on.</p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>

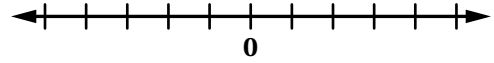
Problem 6b		Standards: MA.7.AR.2.1, MTR.6.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> responses:</p> <ul style="list-style-type: none"> <li>• <math>0.5d &lt; 14</math> (or equivalent)</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding.</b></p> <p>Students who write inequalities containing subtraction may have recognized that the gas used each day and the total amount of gas should be subtracted.</p>

Problem 6c		Standards: MA.7.AR.3.3, MA.7.AR.2.1, MTR.7.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i><math>d &lt; 28</math>. Explanations vary. The solutions to this inequality represent the number of days that Joel's family can drive.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p>E.g., Response is correct but includes an imprecise explanation (e.g., one that does not reference the warning light coming on).</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write <math>d &gt; 28</math> may have correctly solved the related equation but did not check the direction of the inequality.</p>	<p><b>Incomplete</b> response with <b>no explanation.</b></p>

# End-of-Unit Assessment

## Unit 8

1. Select *all* of the values of  $x$  that are solutions to the inequality  $x < -2.5$ .



Use the number line if it helps with your thinking.

- A. -5
  - B. -4
  - C. -2
  - D. 0
  - E. 1
2. Frostbite can occur quickly when skin is exposed to temperatures colder than  $-5^{\circ}\text{C}$ .

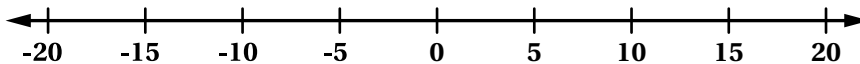
- a Which temperature is colder? Circle one.

$-5^{\circ}\text{C}$

$-15^{\circ}\text{C}$

Explain how you know.

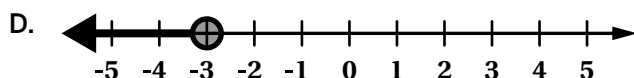
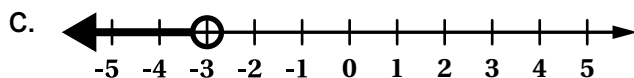
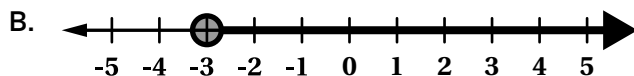
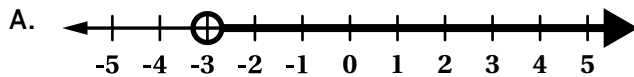
- b Graph all the temperatures at which frostbite can occur.



- c Write an inequality to describe all the temperatures,  $t$ , at which frostbite can occur.

**End-of-Unit Assessment (continued)****Unit 8**

3. Which number line shows all of the values of  $x$  that make the inequality  $2x < -4$  true?



4. Kayla has a goal to hike at least 75 miles. She plans to hike  $n$  miles each week for the next 6 weeks.

Which inequality describes the number of miles Kayla should hike each week to meet her goal?

A.  $6n > 75$

B.  $6n \leq 75$

C.  $6n \geq 75$

D.  $6n < 75$

5. Solve each equation.

a  $30 = 2(x + 3)$

b  $-4x - 17 = -5$

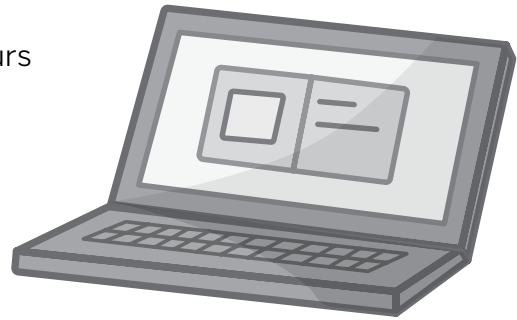
**End-of-Unit Assessment (continued)****Unit 8**

6. When fully charged, Jaylin's computer works for 20 hours. She uses her computer for about 1.5 hours each day.

- a If Jaylin's computer starts with a full charge, can she use it for 13 days? Circle one.

Yes

No



Explain how you know.

- b Which expression describes the hours of computer charge remaining after  $d$  days?

A.  $20 - 2d$

B.  $1.5 - 20d$

C.  $20 - 1.5d$

D.  $1.5d - 20$

Write an inequality that represents the number of days Jaylin can use her computer.


- c Solve the inequality you wrote.

Explain what the solutions mean in this situation.


Standard	MA.5.AR.2.1	MA.6.NSO.1.2	MA.6.AR.1.2	MA.6.AR.2.1	MA.7.AR.3.3	MA.7.AR.2	MA.7.AR.2.2	MA.7.AR.2.3
Problem(s)	2c	2a	2b	1	6a, 6c	6b-c	5a-b	3, 4

Problem 1				Standard: MA.6.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>All correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>-5</li> <li>-4</li> </ul>	<p>One or two correct choices and no incorrect choices.</p> <p>All correct choices and one incorrect choice.</p>	<p>One or two correct choices and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>	

Problem 2a				Standards: MA.6.NSO.1.2, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response and complete explanation.</p> <p>-15°C. Explanations vary.</p> <p>-15°C is lower than -5°C on a vertical number line, so it's colder.</p>	<p>Correct response with minor flaws in explanation.</p> <p>Incorrect response with logical and complete explanation.</p>	<p>Correct response with incomplete explanation.</p> <p>Incorrect response with explanation that shows partial understanding.</p>	<p>Incorrect response with no explanation.</p>	

Problem 2b				Standard: MA.6.AR.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> 	<p>Response shows conceptual understanding with minor errors.</p> <p>Students who graph an open circle at 5 and shade to the left may not have noticed the negative sign.</p>	<p>Response shows incomplete understanding with significant errors.</p> <p>Students who shade the graph to the right may have graphed all of the temperatures warmer than -5°C.</p>	<p>Response shows limited understanding.</p>	

Problem 2c				Standard: MA.5.AR.2.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><math>t &lt; -5</math> or <math>-5 &gt; t</math></p>	<p>Response shows conceptual understanding with minor errors.</p>	<p>Response shows incomplete understanding with significant errors.</p> <p>E.g., Students who write <math>t &gt; -5</math> may need support interpreting the inequality symbol.</p>	<p>Response shows limited understanding.</p>	

Problem 3			Standard: MA.7.AR.2.3
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> 			Incorrect choice.

Problem 4			Standards: MA.7.AR.2.3, MTR.6.1
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> $6n \geq 75$			Incorrect choice.

Problem 5a			Standard: MA.7.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> $x = 12$	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 18 may have divided both sides by 2 and then added 3 to each side instead of subtracting.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{27}{2}</math> may have subtracted 3 from each side as their first step or multiplied 2 only by the first term.</p> <p>Students who write 25 may have subtracted 2 from both sides as their first step.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5b			Standard: MA.7.AR.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct response:</p> $x = -3$	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 3 may not have included the negative sign when writing their solution.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{5}{21}</math> may have written <math>-21x = -5</math> as their first step.</p> <p>Students who write 5.5 may have subtracted 17 from both sides as their first step.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 6a		Standards: MA.7.AR.3.3, MTR.6.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Yes. Explanations vary. Jaylin would use the computer for 19.5 hours in 13 days, so there would only be 0.5 hours remaining in the battery.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p> <p>Students who select <i>No</i> may have answered whether or not the low battery warning would be off after 13 days.</p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>

Problem 6b		Standards: MA.7.AR.1, MTR.6.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> responses:</p> <ul style="list-style-type: none"> <li><math>1.5d &lt; 20</math> (or equivalent)</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding.</b></p> <p>Students who write inequalities containing subtraction may recognize that the battery used each day and the total amount of hours should be subtracted.</p>

Problem 6c		Standards: MA.7.AR.3.3, MA.7.AR.1, MTR.7.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><math>d &lt; 13\frac{1}{3}</math>. Jaylin can use the computer for fewer than 12 days without the low battery warning coming on.</p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p>E.g., Response is correct but includes an imprecise explanation (e.g., one that does not reference the warning coming on).</p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p> <p>Students who write <math>d &gt; 13\frac{1}{3}</math> may have correctly solved the related equation but did not check the direction of the inequality.</p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>

Unit 8

**Show What You  
Know PDFs**



## Show What You Know



8.01

A fish swims downwards 12 meters in a lake to an elevation of 28 feet below sea level.

Write an equation to model this situation.

Solve your equation to determine the initial elevation of the fish. Show your thinking.

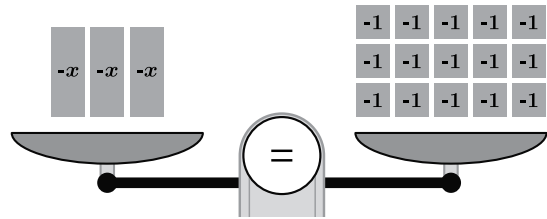
# Show What You Know



8.02

Write an equation to represent what is on the scale.

- a Write an equation to model this situation. Use  $x$  as the variable.



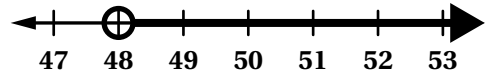
- b What is the value of  $x$ ? Show or explain your thinking.

# Show What You Know

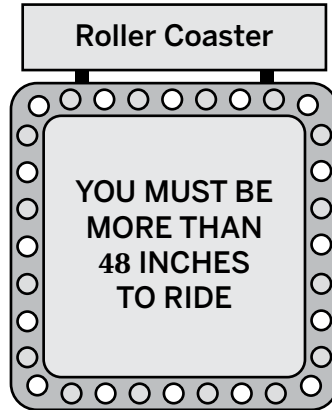
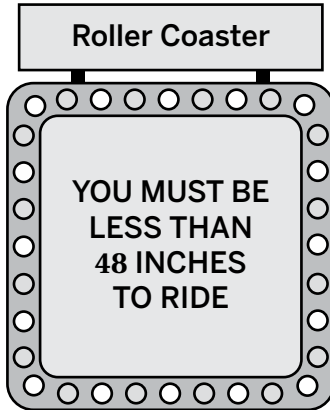


8.03

Here is a graph of all the heights of people who can ride a roller coaster.



- a Circle the sign that matches this graph.



- b Which inequality matches this graph?

A.  $h = 48$

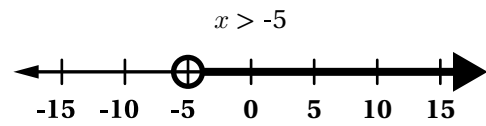
B.  $h > 48$

C.  $h < 48$

**Show What You Know****8.04**

Here is an inequality and its graph.

Select *all* the solutions to the inequality.



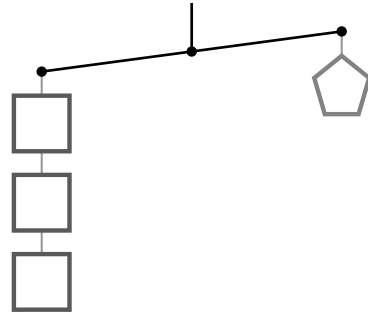
- A. -20
- B. -5
- C. 0
- D. 5
- E. 20




# Show What You Know



8.05

Write an inequality that represents this hanger.




$h \text{ lb}$

$s \text{ lb}$

$p \text{ lb}$

## Show What You Know



8.06

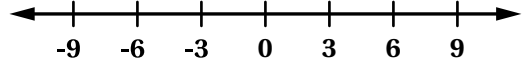
Solve the inequality  $19 \geq 2x$ . Explain your thinking.

# Show What You Know




8.07

Graph the solutions to  $-12 > -2x$ .



### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.01**

A fish swims downwards 12 meters in a lake to an elevation of 28 feet below sea level.

Write an equation to model this situation.

*Responses vary.*

$$x - 12 = -28$$

Solve your equation to determine the initial elevation of the fish. Show your thinking.

*16 meters below sea level (or equivalent)*

*Responses vary.*

$$x - 12 = -28$$


$$x - 12 + 12 = -28 + 12$$

$$x = -16$$

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### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.02**

Write an equation to represent what is on the scale.

**a** Write an equation to model this situation. Use  $x$  as the variable.

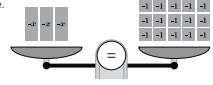
*$-3x = -15$  (or equivalent)*

**b** What is the value of  $x$ ? Show or explain your thinking.

*5 Explanations vary.*

*For every  $-x$  on the left side of the scale, there are 5  $(-1)$ 's on the right side of the scale. So, 1 group of 5  $(-1)$ 's matches each  $-x$ .*


*The solution for  $x$  is 3 because  $-3(5) = -15$ .*



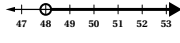
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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.03**

Here is a graph of all the heights of people who can ride a roller coaster.



**a** Circle the sign that matches this graph.

**Roller Coaster**

YOU MUST BE LESS THAN 48 INCHES TO RIDE

**Roller Coaster**

YOU MUST BE MORE THAN 48 INCHES TO RIDE


**b** Which inequality matches this graph?

A.  $h = 48$       **B.  $h > 48$**       C.  $h < 48$

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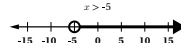
### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.04**

Here is an inequality and its graph.

Select all the solutions to the inequality.



A. -20

B. -5

C. 0


D. 5

E. 20

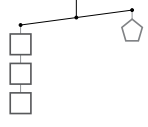
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


Show What You Know Lesson 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.05**

Write an inequality that represents this hanger.  
 $3x > p$  (or equivalent)




  $h$  lb  
  $x$  lb  
  $p$  lb

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Show What You Know Lesson 6

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_


**Show What You Know**  **8.06**

Solve the inequality  $19 \geq 2x$ . Explain your thinking.  
 $9.5 \geq x$  (or equivalent). *Explanations vary.* First, I found the boundary point, which is  $x = 9.5$  because that is the solution to the equation  $19 = 2x$ . The solution to the inequality is  $9.5 \geq x$  because 9.5 is the greatest value that makes the inequality true.

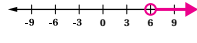
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Show What You Know Lesson 7

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **8.07**

Graph the solutions to  $-12 > -2x$ .



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# Unit 9

## **Assessments and Rubrics**

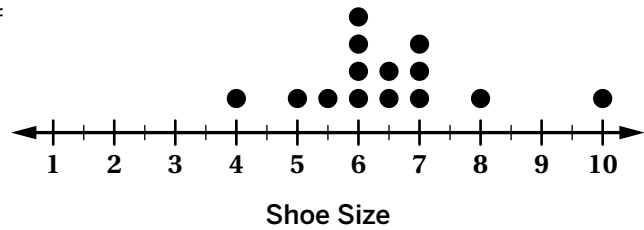


# Pre-Unit Check

## Unit 9

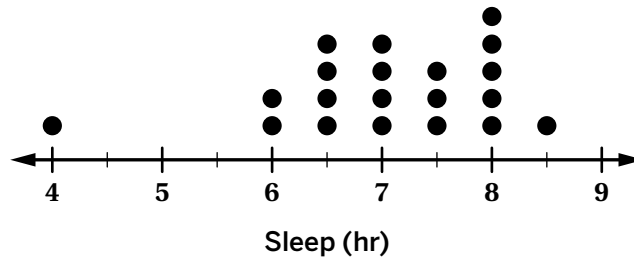
1. This line plot represents the shoe sizes of players on a soccer team.

- a List two things you know about the shoe sizes by looking at the line plot.



- b How many players have a shoe size of 6?

2. This line plot shows the number of hours 20 sixth graders slept on a Saturday night.

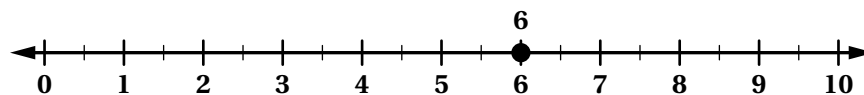


Decide whether each statement is true or false. Circle your answer.

- a The most sleep a sixth grader got was 9 hours. True      False
- b Some students got 6 hours of sleep. True      False
- c Exactly half of the students slept 7 hours or less. True      False

3. Plot and label these numbers on the number line. The first number has been plotted for you.

6       $3\frac{1}{2}$        $\frac{1}{4}$       8.25



**Pre-Unit Check** (continued)**Unit 9**

4. Evaluate each expression.

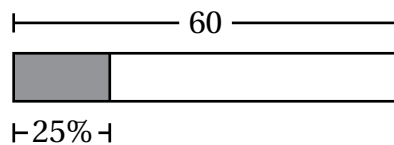
a  $\frac{5 + 11 + 9 + 15}{4}$

b  $(4 + 2 + 9) \div 3$

5. Calculate each percent.

a 25% of 60

Use the tape diagram if it helps you with your thinking.



b 75% of 40

c 25% of 30

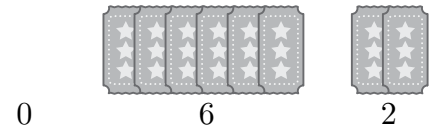
# Sub-Unit Quiz

## Unit 9

1. 5 friends played a game at an arcade.

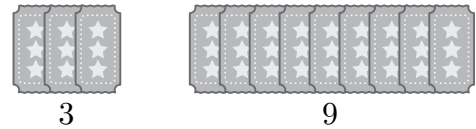
Here is how many tickets each friend won:

0      6      2      3      9



What is the mean number of tickets they won?

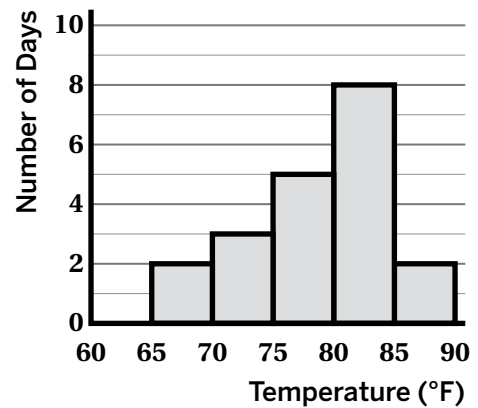
- A. 3 tickets
- B. 4 tickets
- C. 5 tickets
- D. 6 tickets



2. This histogram shows some temperatures in May in Dallas, Texas.

Which of the following statements is definitely true?

- A. This shows the temperatures for a total of 5 days.
- B. There were 3 days when it was 70°F.
- C. It was 80°F or higher on 10 different days.
- D. There were 5 days when it was 77°F.



3. A survey asked 10 people how many hours they spent watching TV last night.

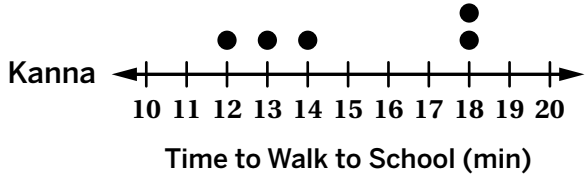
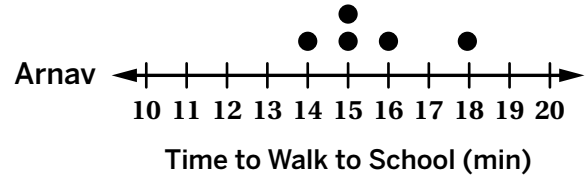
0      4.5      2      3      2      2.5      3      0      2      4

What is a question that can be answered using this data? Create a line plot if it helps with your thinking.

**Sub-Unit Quiz (continued)**

**Unit 9**

4. These line plots show the number of minutes it took Arnav and Kanna to walk to school last week.



a. Whose data has a mean of 15 minutes? Circle one.

Arnav    Kanna    Both    Neither

Show or explain your thinking.

b. What are the mode and the range of Kanna's times?

5. Here are the heights, in inches, of plants in a garden.

Plant Height (in.)				
2.5	3.2	1.9	4.3	5.4
7.8	5.2	6.5	8.1	3.4

Complete the frequency table and make a histogram using the plant height data.

Plant Height (in.)	0 to less than 2	2 to less than 4	4 to less than 6	6 to less than 8	8 to less than 10
Frequency					



Standard	MA.6.DP.1.1	MA.6.DP.1.2	MA.6.DP.1.4	MA.6.DP.1.5
Problem(s)	3	1, 4	2	5


Problem 1		Standard: MA.6.DP.1.2	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p>4 tickets</p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 3 tickets may have calculated the median instead of the mean.</p> <p>Students who select 5 tickets may have calculated the mean but did not include 0.</p>

Problem 2		Standard: MA.6.DP.1.4	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p>It was 80°F or higher on 10 different days.</p>			<p><b>Incorrect</b> choice.</p>

Problem 3		Standard: MA.6.DP.1.1	
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>Questions vary. What is the range number of hours spent watching TV last night?</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a question about the number of hours spent watching TV data but cannot be calculated from the given data.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Response includes a question about data other than the number of hours spent watching TV.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4a			Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete</b> explanation.</p> <p><i>Kanna. Explanations vary.</i></p> <ul style="list-style-type: none"> <li>• The distances to the left of 15 and the distances to the right of 15 on Arnav's line plot are not equal, so his mean can't be 15.</li> <li>• The total time it took Kanna to walk to school was <math>12 + 13 + 14 + 18 + 18 = 75</math>, and <math>75 \div 5 = 15</math>.</li> </ul>	<p><b>Correct</b> response with <b>minor flaws</b> in explanation.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete</b> explanation.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p> <p>E.g., Response includes a calculation of the median instead of the mean.</p> <p>Students who select "Both" may have incorrectly calculated the mean of Arnav's data set to be 15.</p>	<p><b>Incorrect</b> response with <b>no</b> explanation.</p>

Problem 4b			Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>18 minutes; 6 minutes</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write 15 for the mode may have found the mode for Arnav's times instead of Kanna's times.</p> <p>Students who write 4 for the range may have calculated the range for Arnav's times instead of Kanna's times.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write 15.6 may have calculated the mean of Arnav's times.</p>

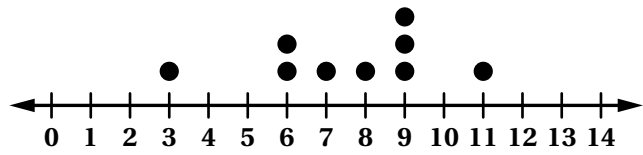
Problem 5		Standard: MA.6.DP.1.5														
4 Meeting	3 Approaching	2 Developing	1 Beginning													
<p><b>Correct</b> response:</p> <table border="1"> <thead> <tr> <th>Plant Height (in.)</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0 to less than 2</td> <td>1</td> </tr> <tr> <td>2 to less than 4</td> <td>3</td> </tr> <tr> <td>4 to less than 6</td> <td>3</td> </tr> <tr> <td>6 to less than 8</td> <td>2</td> </tr> <tr> <td>8 to less than 10</td> <td>1</td> </tr> </tbody> </table> 	Plant Height (in.)	Frequency	0 to less than 2	1	2 to less than 4	3	4 to less than 6	3	6 to less than 8	2	8 to less than 10	1	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Both the frequency table and histogram are complete, but have <b>one</b> error.</p> <p>E.g., Frequency tables include 10 data values, but one category total is incorrect.</p> <p>E.g., Histograms are completed based off of the incorrect data values in the frequency table.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Both the frequency table and histogram are complete, but have <b>two</b> errors.</p> <p>E.g., Frequency tables include 10 data values, but two category totals are incorrect.</p> <p>E.g., Histograms are completed based off of the incorrect data values in the frequency table.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Both the frequency table and histogram are incomplete, and have <b>three or more</b> errors.</p> <p>E.g., Frequency tables include fewer than 10 data values, and three or more category totals are incorrect.</p> <p>E.g., Histograms are completed based off of the incorrect data values in the frequency table.</p>	
Plant Height (in.)	Frequency															
0 to less than 2	1															
2 to less than 4	3															
4 to less than 6	3															
6 to less than 8	2															
8 to less than 10	1															

# End-of-Unit Assessment

## Unit 9

1. What is the *median* of this data set?

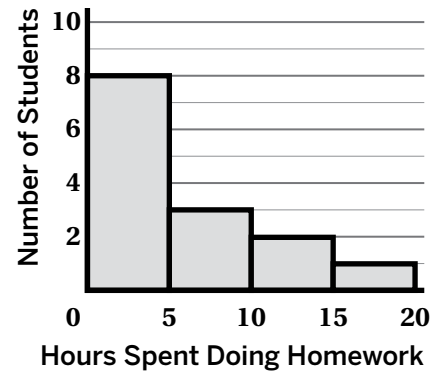
- A. 7
- B. 7.5
- C. 8
- D. 9



2. A teacher is wondering if he assigns too much homework.

He asked his students how many hours they spent doing homework last week.

Circle whether each statement below is true, false, or if there is not enough information.



- |   |  |
|---|--|
| <p><b>a</b> The teacher asked a total of 4 students.</p>                | <p>True      False      Not enough information</p> |
| <p><b>b</b> One student spent exactly 15 hours.</p>                     | <p>True      False      Not enough information</p> |
| <p><b>c</b> No student spent more than 20 hours.</p>                    | <p>True      False      Not enough information</p> |
| <p><b>d</b> More than half of his students spent less than 5 hours.</p> | <p>True      False      Not enough information</p> |

3. Dalia wrote down the number of miles she ran each day.

Calculate the *mean* distance Dalia ran.

Day	Distance (mi)
Monday	2.5
Tuesday	3.5
Wednesday	5
Thursday	2
Friday	7

**End-of-Unit Assessment** (continued)

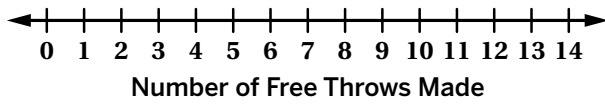
**Unit 9**

4. Manuel has data from basketball practice about the number of free throws each teammate made.

8      5      6      5      9      10      2      5      8      10

a Create a line plot for Manuel's team.

b Determine each statistic for his team.



Quartile 1: .....

Median: .....

Quartile 3: .....

IQR: .....

5. Here are temperatures for five days in January for two cities.

**Minneapolis**

Temperatures (°F)				
32	25	35	38	20

Mean = 30°F, Range = 18°F

**Ottawa**

Temperatures (°F)				
31	29	27	31	32

Mean = 30°F, Range = ?°F

a Calculate the range of the temperatures in Ottawa.

b Which city has a wider spread of temperatures? Circle one.

Minneapolis

Ottawa

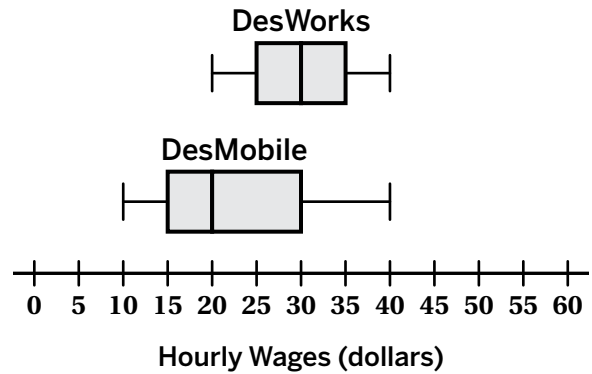
They have the same spread

**End-of-Unit Assessment (continued)**

**Unit 9**

6. Two companies analyzed the hourly wages of their employees.

Here are the results.



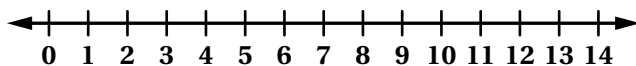
- a What is the median hourly wage for DesMobile?
- b What percentage of workers at *DesWorks* have an hourly wage of \$30 or more?
- c What percentage of workers at *DesMobile* have an hourly wage of \$30 or more?
- d Which company's wages have a greater IQR? Circle one.

DesWorks                                      DesMobile                                      They are the same

Explain how you know.

7. Create a line plot with:

- At least five data points.
- A median of 6.
- A mean that is less than the median.





Standard	MA.6.DP.1.2	MA.6.DP.1.3	MA.6.DP.1.4	MA.7.DP.1.1	MA.7.DP.1.2
Problem(s)	1, 3, 5	4b, 6	2, 4a, 7	8a	8b

Problem 1			Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>8</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select 7.5 may have determined the mean.</p> <p>Students who select 9 may have chosen the most frequent value.</p>


Problem 2a			Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>False</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>True</i> may have counted the number of bins.</p>

Problem 2b			Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><b>Not enough information</b></p>			<p><b>Incorrect</b> choice.</p> <p>E.g., Students who select "True" may have noticed that there is one student who spent between 15 to 20 hours.</p>

Problem 2c				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p><b>True</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>False</i> may understand that we do not know if any student spent exactly 20 hours.</p>	

Problem 2d				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p><b>True</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>False</i> may be paying attention to the number of bins.</p> <p>Students who select <i>Not enough information</i> may think that the bins of a histogram include the rightmost value.</p>	

Problem 3				Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p><b>4 miles</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "3.5 miles" may have calculated the median.</p>	

Problem 4a				Standards: MA.6.DP.1.4, MTR.6.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p>  <p>Number of Free Throws Made</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Most data points</b> are in the correct location and <b>most data points</b> have appropriate spacing.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4b			
Standards: MA.6.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> responses:</p> <ul style="list-style-type: none"> <li>• Quartile 1: 5</li> <li>• Median: 7</li> <li>• Quartile 3: 9</li> <li>• IQR: 4</li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Three out of four</b> statistics are correct.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p><b>Two out of four</b> statistics are correct.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>One out of four</b> statistics is correct.</p>

Problem 5a			
Standard: MA.6.DP.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>5°F</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 31°F may have calculated the median.</p>	<p>Response shows <b>limited understanding</b>.</p>

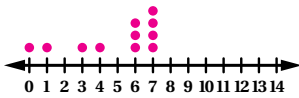
Problem 5b			
Standard: MA.6.DP.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p>Minneapolis</p>			<p><b>Incorrect</b> choice.</p> <p>Students who select <i>They have the same spread</i> may have been paying attention to the means instead of the ranges.</p>

Problem 6a			
Standard: MA.6.DP.1.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p>\$20</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$30 may have the correct median for the incorrect company.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$15 may have determined the IQR.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write \$40 may have determined the maximum.</p>

Problem 6b				Standard: MA.6.DP.1.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>About 50%</p>	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding</b> .	

Problem 6c				Standard: MA.6.DP.1.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>About 25%</p>	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding</b> .	

Problem 6d				Standards: MA.6.DP.1.3, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response and complete explanation.</p> <p>DesMobile. Explanations vary. The IQR for DesMobile employees is about \$15, which is greater than the IQR for DesWorks of about \$10.</p>	<p>Correct response with <b>minor flaws</b> in explanation.</p> <p>Incorrect response with logical and <b>complete explanation</b>.</p>	<p>Correct response with <b>incomplete</b> explanation.</p> <p>Incorrect response with explanation that shows <b>partial understanding</b>.</p>	Incorrect response with <b>no</b> explanation.	

Problem 7				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>Line plots vary.</p> 	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Line plot meets <b>two of the three</b> criteria.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Line plot has a median of 6 or a mean that is less than the median.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Line plot has at least five data points.</p>	

Problem 8a				Standard: MA.7.DP.1.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete explanation.</b></p> <p><i>No. Explanations vary. These are only samples of the 6th graders and 7th graders at Maneli's school, not the full populations.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>	

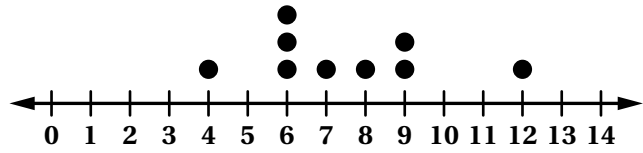
Problem 8b				Standard: MA.7.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete explanation.</b></p> <p><i>Responses vary. The median is a measure of center for the data. The measure of center changes from 10.5 to 15, which is a large change. This shows that there is a big difference in the number of books read by the two grades.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with <b>explanation</b> that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>	

# End-of-Unit Assessment

## Unit 9

1. What is the *median* of this data set?

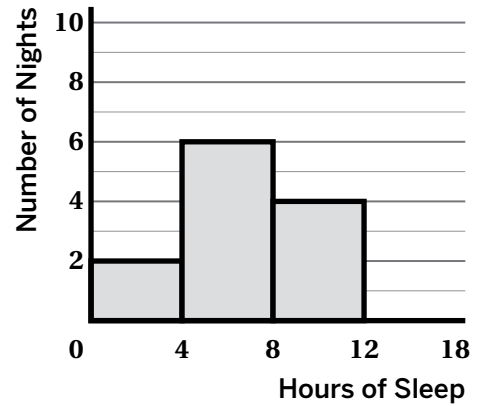
- A. 6
- B. 7
- C. 7.5
- D. 8



2. Anika wants to learn about how much she sleeps.

She made this histogram of the number of hours she slept each night.

Circle whether each statement below is true, false, or if there is not enough information.



- |  |      |       |                        |
|--|------|-------|------------------------|
| <b>a</b> Anika kept track of her sleep for 3 nights.         | True | False | Not enough information |
| <b>b</b> Anika slept less than 12 hours every night.         | True | False | Not enough information |
| <b>c</b> One night, Anika slept exactly 6 hours.             | True | False | Not enough information |
| <b>d</b> Half of the nights, Anika slept fewer than 8 hours. | True | False | Not enough information |

3. Five friends shared a bag of cookies.

Calculate the *mean* number of cookies eaten.

Person	Cookies Eaten
Troy	2.5
Latifa	1.5
Sai	5
Matias	2
Katie	4

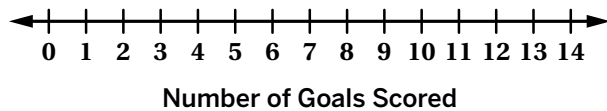
## End-of-Unit Assessment (continued)

## Unit 9

4. Eliza has data from her soccer team about the number of goals each teammate scored.

4      7      4      5      9      8      4      1      9      7

a Create a line plot for Eliza's team.



b Determine each statistic for her team.

Quartile 1: .....

Median: .....

Quartile 3: .....

IQR: .....

5. Here are temperatures for five days in February for two cities.

### Montreal

Temperatures (°F)				
30	29	32	35	34

Mean = 32°F, Range = 6°F

### Chicago

Temperatures (°F)				
35	37	34	28	26

Mean = 32°F, Range = ?°F

a Calculate the range of the temperatures in Chicago.

b Which city has a wider spread of temperatures? Circle one.

Montreal

Chicago

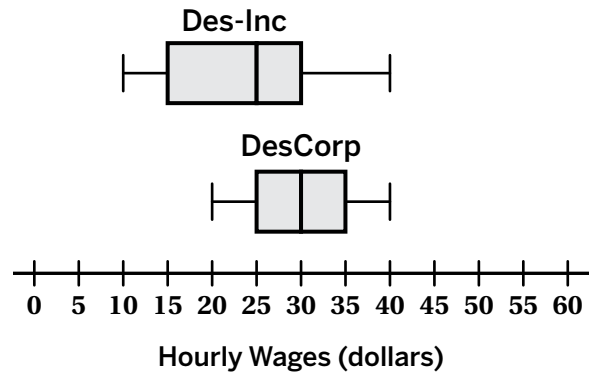
They have the same spread

**End-of-Unit Assessment (continued)**

**Unit 9**

6. Two companies analyzed the hourly wages of their employees.

Here are the results.



a What is the median hourly wage for DesCorp?

b What percentage of employees at *Des-Inc* have an hourly wage of \$25 or more?

c What percentage of employees at *DesCorp* have an hourly wage of \$25 or more?

d Which company's wages have a greater IQR? Circle one.

Des-Inc

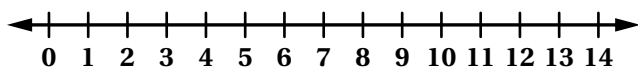
DesCorp

They are the same

Explain how you know.

7. Create a line plot with:

- At least five data points.
- A median of 7.
- A mean that is greater than the median.





Standard	MA.6.DP.1.2	MA.6.DP.1.3	MA.6.DP.1.4	MA.7.DP.1.1	MA.7.DP.1.2
Problem(s)	1, 3, 5	4b, 6	2, 4a, 7	8a	8b

Problem 1			Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p>7</p>			<p>Incorrect choice.</p> <p>Students who select 6 may have chosen the most frequent value.</p> <p>Students who select 7.5 may have determined the mean.</p>


Problem 2a			Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p>False</p>			<p>Incorrect choice.</p> <p>Students who select <i>True</i> may have counted the number of bins.</p>

Problem 2b			Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p>True</p>			<p>Incorrect choice.</p> <p>Students who select <i>False</i> may have responded to the statement "Anika slept 12 hours or more every night."</p> <p>Students who select <i>Not enough information</i> may think that the bins of a histogram include the rightmost value.</p>

Problem 2c				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p>Not enough information</p>			<p>Incorrect choice.</p> <p>Students who select <i>False</i> may understand that we do not know if Anika slept exactly 6 hours.</p>	

Problem 2d				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p>False</p>			<p>Incorrect choice.</p> <p>Students who select <i>True</i> may notice that on 6 of the 12 nights, Anika slept 4 to 8 hours.</p> <p>Students who select <i>Not enough information</i> may think that the bins of a histogram include the rightmost value.</p>	

Problem 3				Standard: MA.6.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>3 cookies</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "2.5 cookies" may have calculated the median.</p>	

Problem 4a				Standards: MA.6.DP.1.4, MTR.6.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p>  <p>Number of Goals Scored</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Most data points</b> are in the correct location and <b>most data points</b> have appropriate spacing.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p>	<p>Response shows <b>limited understanding</b>.</p>	

Problem 4b			
Standards: MA.6.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> responses:</p> <ul style="list-style-type: none"> <li>• <b>Quartile 1: 4</b></li> <li>• <b>Median: 6</b></li> <li>• <b>Quartile 3: 8</b></li> <li>• <b>IQR: 4</b></li> </ul>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p><b>Three out of four</b> statistics are correct.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p><b>Two out of four</b> statistics are correct.</p>	<p>Response shows <b>limited understanding</b>.</p> <p><b>One out of four</b> statistics is correct.</p>

Problem 5a			
Standard: MA.6.DP.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>11°F</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write “34°F” may have calculated the median.</p>	<p>Response shows <b>limited understanding</b>.</p>

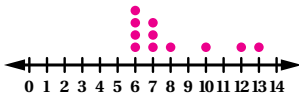
Problem 5b			
Standard: MA.6.DP.1.2			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> choice:</p> <p><b>Chicago</b></p>			<p><b>Incorrect</b> choice.</p> <p>Students who select “They have the same spread” and remove the italic may have been paying attention to the means instead of the ranges.</p>

Problem 6a			
Standard: MA.6.DP.1.3			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><b>\$30</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write \$25 may have the correct median for the incorrect company.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write \$10 may have determined the IQR.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write \$40 may have determined the maximum.</p>

Problem 6b				Standard: MA.6.DP.1.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>About 50%</p>	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding</b> .	

Problem 6c				Standard: MA.6.DP.1.3
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>About 75%</p>	Response shows <b>conceptual understanding</b> with minor errors.	Response shows <b>incomplete understanding</b> with significant errors.	Response shows <b>limited understanding</b> .	

Problem 6d				Standards: MA.6.DP.1.3, MTR.4.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response and complete explanation.</p> <p>Des-Inc. Explanations vary. The IQR for Des-Inc employees is about \$15, which is greater than the IQR for DesCorp of about \$10.</p>	<p>Correct response with minor flaws in explanation.</p> <p>Incorrect response with logical and complete explanation.</p>	<p>Correct response with incomplete explanation.</p> <p>Incorrect response with explanation that shows partial understanding.</p>	Incorrect response with no explanation.	

Problem 7				Standard: MA.6.DP.1.4
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct response:</p> <p>Line plots vary.</p> 	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Line plot meets <b>two of the three</b> criteria.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>E.g., Line plot has a median of 7 or a mean that is greater than the median.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>E.g., Line plot has at least five data points.</p>	

Problem 8a				Standard: MA.7.DP.1.1
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete explanation.</b></p> <p><i>No. Explanations vary. They sampled 15 students from each class. This is not the whole population.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>	

Problem 8b				Standard: MA.7.DP.1.2
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Correct</b> response and <b>complete explanation.</b></p> <p><i>Responses vary. The median is a measure of center for the data. The measures of center is 30 for one class but 20 for another class, which is a large difference. This shows that there is a big difference in the the time that Alena's classmates and Yasmine's classmates spend commuting.</i></p>	<p><b>Correct</b> response with <b>minor flaws in explanation.</b></p> <p><b>Incorrect</b> response with logical and <b>complete explanation.</b></p>	<p><b>Correct</b> response with <b>incomplete explanation.</b></p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding.</b></p>	<p><b>Incorrect</b> response with <b>no explanation.</b></p>	



Unit 9

**Show What You  
Know PDFs**



# Show What You Know



9.01

Match each question with the type of data it produces.

Question	Numerical Data	Categorical Data
What were the high temperatures this week?		
What are the different heights of people in our class?		
Where were people in our class born?		

## Show What You Know



9.02

Select *all* the questions that are statistical:

- A. What is the average height of students in our class?
- B. How many pencils are in my pencil case?
- C. What is the most common favorite ice cream flavor among students in our school?
- D. How many hours do students in our grade spend on homework each week?
- E. What is the capital of Alaska?

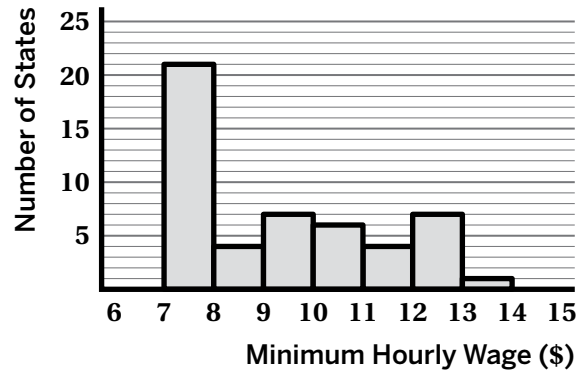
# Show What You Know



9.03

This histogram shows the minimum wages of all 50 states in 2020.

How many states have a minimum hourly wage of at least \$12?



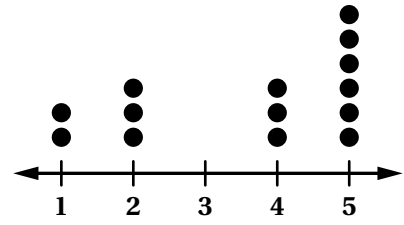
Source: United States Department of Labor

# Show What You Know

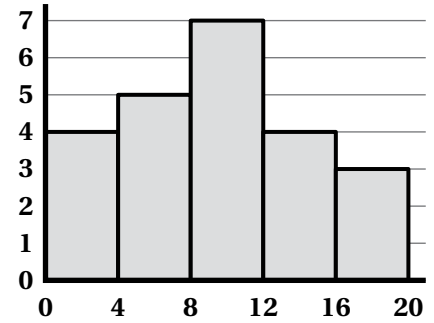


9.04

**a** Which data set has a wider range?



**b** Describe the shape of each data display.



# Show What You Know

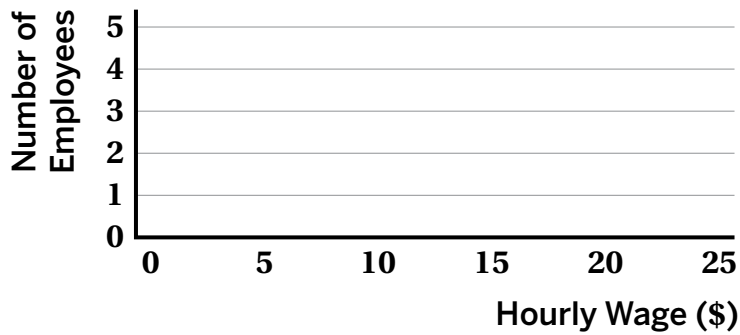


9.05

Here are the hourly wages of 10 employees at a restaurant.

\$8.00	\$7.25	\$7.25	\$15.50	\$20.00
\$13.50	\$14.00	\$9.75	\$24.60	\$13.00

Create a histogram of this data.

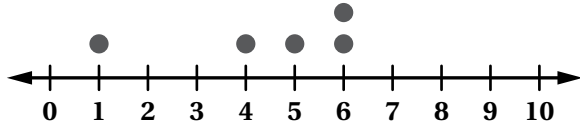


# Show What You Know



9.06

Here are a dot plot and a table showing how many cookies Aditi ate each day last week. Calculate the mean of this data. Show or explain your thinking.



Day	Number of Cookies
Monday	5
Tuesday	4
Wednesday	6
Thursday	6
Friday	1

## Show What You Know



9.07

Ben kept track of how many hours he slept each night for 10 days.

8, 7, 8, 7, 8, 6, 10, 9, 8, 8

What is the mode of his data set?

What does the mode tell us about how many hours Ben slept over the 10 days?

# Show What You Know



9.08

10 students shared the age of their family's pet.

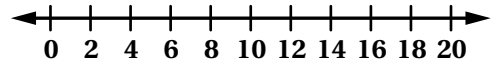
What is the median age of these students' pets?

Show or explain your thinking.

Create a dot plot if it helps you with your thinking.

**Age of Pet (yr)**

8, 1, 9, 1, 14, 19, 10, 2, 4, 3



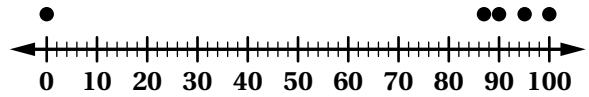
**Age of Pet (yr)**

# Show What You Know



9.09

Ricardo got the following scores on five class assignments: 87, 90, 0, 95, 100.



**Ricardo's Scores**

- a** Which of these statements is *true*?
- A.** The median and the mean are about equal.
  - B.** The median is less than the mean.
  - C.** The median is greater than the mean.
  - D.** The mean cannot be determined.
- b** Which measure of center do you think is better for describing Ricardo's scores? Circle one.

Mean                      Median

Explain your thinking.



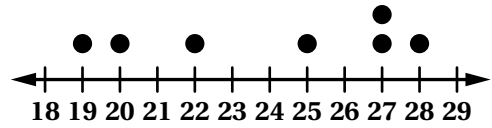
# Show What You Know



9.11

Here is a data set with 7 points.

Determine the values of Q1, Q2 (median), and Q3.



Q1: .....

Q2 (Median): .....

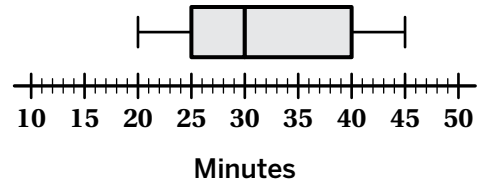
Q3: .....

# Show What You Know



9.12

Inola took the bus to school most days in January. She wrote down how many minutes her journey took each day and made this box plot.



- a** Determine the median, IQR, and range for this data.

Median: .....

IQR: .....

Range: .....

- b** About what percent of Inola's journeys to school took 40 minutes or less?

- |               |                |
|---------------|----------------|
| <b>A.</b> 75% | <b>B.</b> 50%  |
| <b>C.</b> 25% | <b>D.</b> 100% |

## Show What You Know



9.13

Here is a new data set: 4, 5, 5, 6, 8, 8

- a Calculate the mean.
- b Calculate the range.



**Show What You Know****9.15**

20 random students from Median Middle School were asked what superpower they wanted. Here are the results.

Median Middle School has 500 students. Estimate the number of students who want teleportation. Show or explain your thinking.

Superpower	Number of Students
Teleportation	4
Flight	3
Super strength	3
Time travel	5
Invisibility	5

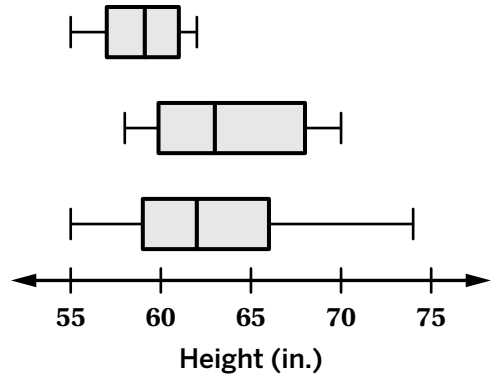
# Show What You Know



9.16

Omari wants to know the median height of all 200 students at his dance school. He sampled 20 students on three different days and recorded their heights.

- a Predict the median height of *all* students at Omari's dance school.



- b Explain how accurate you think your prediction is.

# Show What You Know



9.17

Caasi wonders if students watched more movies over winter break than teachers.

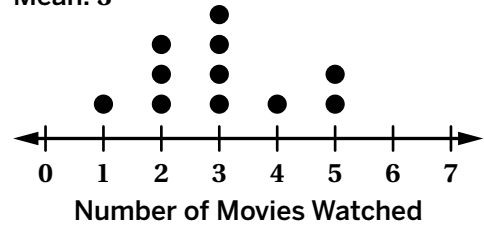
After collecting data from a random sample of 11 students and 11 teachers, She claimed that the difference wasn't that big.

Based on her strategy, is Caasi's claim correct?

Use evidence to support your claim.

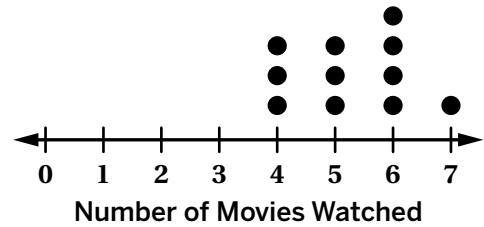
**Teachers**

Mean: 3



**Students**

Mean: 5.3



### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.01

Match each question with the type of data it produces.

Question	Numerical Data	Categorical Data
What were the high temperatures this week?	✓	
What are the different heights of people in our class?	✓	
Where were people in our class born?		✓

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### Show What You Know Lesson 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.02

Select *all* the questions that are statistical:

- A. What is the average height of students in our class?
- B. How many pencils are in my pencil case?
- C. What is the most common favorite ice cream flavor among students in our school?
- D. How many hours do students in our grade spend on homework each week?
- E. What is the capital of Alaska?

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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.03

This histogram shows the minimum wages of all 50 states in 2020.

How many states have a minimum hourly wage of at least \$12?

**8 states**

Minimum Hourly Wage (\$)	Number of States
6-7	22
7-8	4
8-9	6
9-10	5
10-11	6
11-12	1
12-13	6
13-14	1
14-15	1

Source: United States Department of Labor

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### Show What You Know Lesson 4

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.04

a. Which data set has a wider range?

**Data Set B**

b. Describe the shape of each data display.

**Responses vary. Data set A is skewed left. Data set B has a roughly symmetrical shape.**

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Show What You Know **Lesson 5**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.05

Here are the hourly wages of 10 employees at a restaurant.

\$8.00	\$7.25	\$7.25	\$15.50	\$20.00
\$13.50	\$14.00	\$9.75	\$24.60	\$13.00

Create a histogram of this data.

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Show What You Know **Lesson 6**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.06

Here are a dot plot and a table showing how many cookies Aditi ate each day last week. Calculate the mean of this data. Show or explain your thinking.

Day	Number of Cookies
Monday	5
Tuesday	4
Wednesday	6
Thursday	6
Friday	1

4.4 cookies. Responses vary. I added all of the cookies Aditi ate over the week, which totaled 22 cookies. Then, I divided 22 by the number of days she ate cookies, which was  $5 \frac{22}{5} = 4.4$ .

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Show What You Know **Lesson 7**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.07

Ben kept track of how many hours he slept each night for 10 days.

8, 7, 8, 7, 8, 6, 10, 9, 8, 8

What is the mode of his data set?  
8 hours

What does the mode tell us about how many hours Ben slept over the 10 days?  
Responses vary. The most common number of hours per night that Ben slept over the past 10 days is 8 hours.

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Show What You Know **Lesson 8**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.08

10 students shared the age of their family's pet.


Age of Pet (yr)  
8, 1, 9, 1, 14, 19, 10, 2, 4, 3

What is the median age of these students' pets?  
Show or explain your thinking.  
6 years

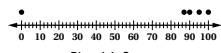
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Show What You Know Lesson 9

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **9.09**

Ricardo got the following scores on five class assignments: 87, 90, 0, 95, 100.



**Ricardo's Scores**

a Which of these statements is true?

- A. The median and the mean are about equal.
- B. The median is less than the mean.
- C. The median is greater than the mean.**
- D. The mean cannot be determined.

b Which measure of center do you think is better for describing Ricardo's scores? Circle one.

Mean                  Median

Explain your thinking.


*Responses and explanations vary.*

- **Median.** Ricardo did really well on 4 of his 5 assignments, so reporting the median makes more sense.
- **Mean.** Otherwise, the assignment that Ricardo did badly on won't really be included.

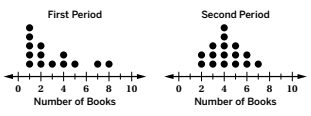
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Show What You Know Lesson 10

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **9.10**

Here are two line plots comparing the number of books read over the last month by students in First and Second Period. Each dot represents 1 student.



a What is the range of each data set?

**First period range is  $8 - 1 = 7$  books.**  
**Second period range is  $7 - 2 = 5$  books.**


b Which Period is more consistent in the number of books read? Explain your thinking.

**Explanations vary. Second period is more consistent because the class has a smaller range of students who read books than First period.**

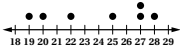
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Show What You Know Lesson 11

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **9.11**

Here is a data set with 7 points.



Determine the values of Q1, Q2 (median), and Q3.

Q1: 20


Q2 (Median): 23

Q3: 27

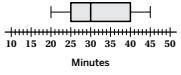
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Show What You Know Lesson 12

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **9.12**

Inola took the bus to school most days in January. She wrote down how many minutes her journey took each day and made this box plot.



a Determine the median, IQR, and range for this data.

Median: **25 minutes**

IQR: **15 minutes**

Range: **23 minutes**

b About what percent of Inola's journeys to school took 40 minutes or less?

- A. 75%**
- B. 50%
- C. 25%
- D. 100%

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Show What You Know Lesson 13

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.13

Here is a new data set: 4, 5, 5, 6, 8, 8

a Calculate the mean.  
6

b Calculate the range.  
4

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Show What You Know Lesson 14

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.14

Ariel wants to know: What is the most popular chip flavor among teenagers in the United States?

a What is the population for Ariel's question?  
The population is all teenagers in the United States.

b What is a sample Ariel could use to help answer this question?  
A sample could be the teenagers at her school.

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Show What You Know Lesson 15

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.15

20 random students from Median Middle School were asked what superpower they wanted. Here are the results.

Superpower	Number of Students
Teleportation	4
Flight	3
Super strength	3
Time travel	5
Invisibility	5

Median Middle School has 500 students. Estimate the number of students who want teleportation. Show or explain your thinking.  
100 students. Responses vary. First, I found the percentage of students from the random group who want teleportation as their superpower, which was  $\frac{4}{20}$  or 0.20. Then, I multiplied 0.20 and 500 to estimate the number of students at the school who want the same superpower, which was  $0.20 \times 500 = 100$  student.

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Show What You Know Lesson 16

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 9.16

Omari wants to know the median height of all 200 students at his dance school. He sampled 20 students on three different days and recorded their heights.


a Predict the median height of all students at Omari's dance school.  
Responses between 58 and 63 are considered correct.

b Explain how accurate you think your prediction is.  
Explanations vary. Because the sample medians and IQRs are all similar, I think my prediction is pretty accurate.

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Show What You Know Lesson 17

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  9.17

Caasi wonders if students watched more movies over winter break than teachers.

After collecting data from a random sample of 11 students and 11 teachers, she claimed that the difference wasn't that big.

Based on her strategy, is Caasi's claim correct?

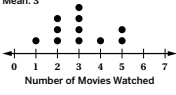
**No**

Use evidence to support your claim.

**Explanations vary. Caasi's claim is incorrect because the difference between the means is  $5.3 - 3 = 2.3$ . There is a small difference between the number of movies watched by each population.**

**Teachers**

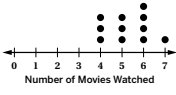
Mean: 3



Number of Movies Watched

**Students**

Mean: 5.3



Number of Movies Watched

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Unit 10

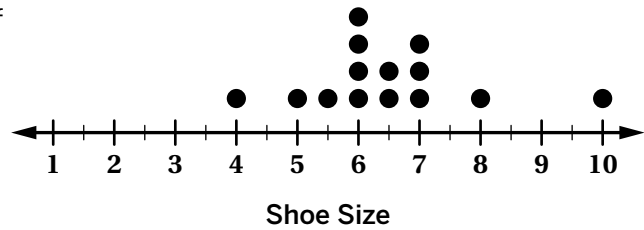
# **Assessments and Rubrics**



# Pre-Unit Check

## Unit 10

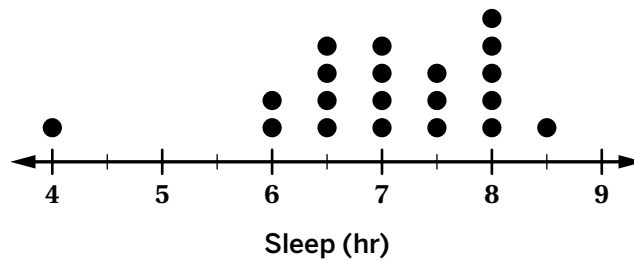
1. This line plot represents the shoe sizes of players on a soccer team.



a List two things you know about the shoe sizes by looking at the line plot.

b How many players have a shoe size of 6?

2. This line plot shows the number of hours 20 sixth graders slept on a Saturday night.

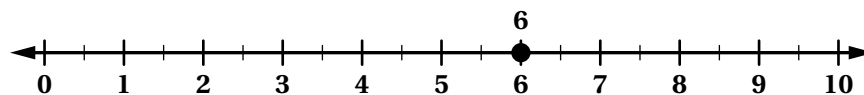


Decide whether each statement is true or false. Circle your answer.

- |   |   |      |       |
|---|---|------|-------|
| a | The most sleep a sixth grader got was 9 hours.      | True | False |
| b | Some students got 6 hours of sleep.                 | True | False |
| c | Exactly half of the students slept 7 hours or less. | True | False |

3. Plot and label these numbers on the number line. The first number has been plotted for you.

6       $3\frac{1}{2}$        $\frac{1}{4}$       8.25



**Pre-Unit Check** (continued)**Unit 10**

4. Evaluate each expression.

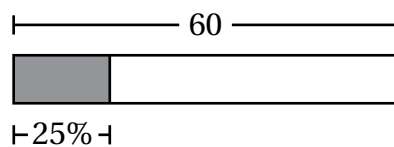
a  $\frac{5 + 11 + 9 + 15}{4}$

b  $(4 + 2 + 9) \div 3$

5. Calculate each percent.

a 25% of 60

Use the tape diagram if it helps you with your thinking.



b 75% of 40

c 25% of 30

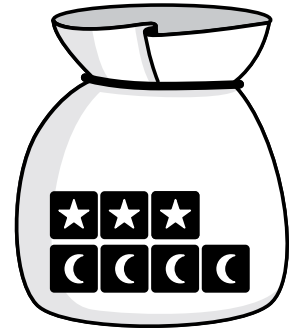
# End-of-Unit Assessment

**Unit 10**

1. You pick a block out of this bag without looking.

What is the probability of picking a star?

- A.  $\frac{1}{3}$       B.  $\frac{3}{4}$       C.  $\frac{3}{7}$       D.  $\frac{4}{7}$



2. Adriana is curious: do more customers go to fast-food restaurants or to other restaurants?

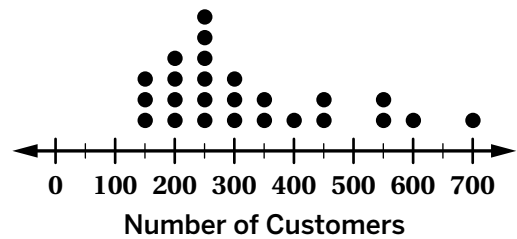
She went to a random sample of 50 restaurants (25 fast-food and 25 other).

At each restaurant, Adriana recorded the number of customers the restaurant had that day.

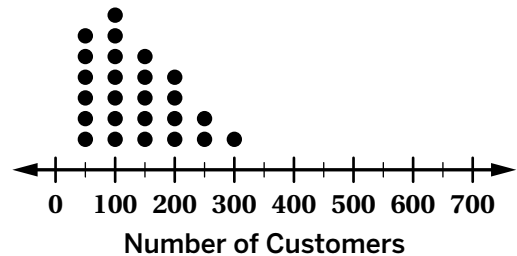
Based on the data, select *all* of the true statements.

- A. Fast-food restaurants tend to get more customers than other restaurants.
- B. Other restaurants tend to get more customers than fast-food restaurants.
- C. Fast-food restaurants have a more consistent number of customers than other restaurants.
- D. Other restaurants have a more consistent number of customers than fast-food restaurants.
- E. All fast-food restaurants have more customers than other restaurants.

**Fast-Food Restaurants**



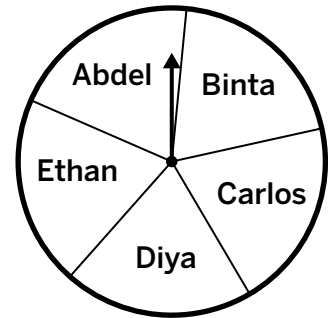
**Other Restaurants**



**End-of-Unit Assessment (continued)**

**Unit 10**

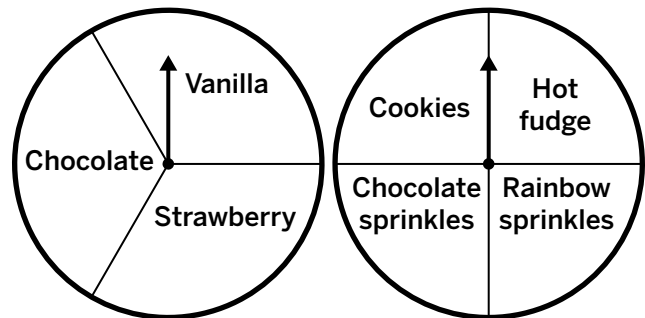
3. Five friends share an apartment. Each week, they use this spinner with 5 equal sections to determine who will mop the floor.



Estimate the number of times Abdel will be chosen to mop in a year (about 52 weeks).

Explain your thinking.

4. The Spin N' Dine Restaurant sells ice cream for dessert. You can spin to either select a flavor of ice cream at random OR one topping at random.



- a What is the probability of getting chocolate ice cream on your spin?
- b What is the probability of NOT getting Hot fudge as a topping on your spin?

5. Rudra thinks school should have a longer lunch period and wants to know if others agree. He surveys a random sample of 20 students and find that 12 of them agree.

- a What is the population for Rudra question?
- b If the school has 250 students, about how many do you predict would agree?
- c The next day, Rudra surveys another 20 random students and finds that 8 of them are in favor. Does this make you more or less confident in your prediction?

Explain your thinking.

Standard	MA.7.DP.1.2	MA.7.DP.1.3	MA.7.DP.2.2	MA.7.DP.2.3	MA.7.DP.2.4
Problem(s)	2	5a, 5b, 5c	1	4a, 4b	3

Problem 1		Standard: MA.7.DP.2.2		
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p>Correct choice:</p> <p><math>\frac{3}{7}</math></p>			<p><b>Incorrect choice.</b></p> <p>Students who select <math>\frac{1}{3}</math> may have recognized that they are picking one of three stars.</p> <p>Students who select <math>\frac{3}{4}</math> may have compared the number of stars to the number of moons.</p>	

Problem 2		Standards: MA.7.DP.1.2, MTR.6.1		
4 Meeting	3 Approaching	2 Developing	1 Beginning	
<p><b>Both correct</b> choices and <b>no incorrect</b> choices.</p> <ul style="list-style-type: none"> <li>Fast-food restaurants tend to get more customers than other restaurants.</li> <li>Other restaurants have a more consistent number of customers than fast-food restaurants.</li> </ul>	<p><b>One correct</b> choice and <b>no incorrect</b> choices.</p> <p><b>Both correct</b> choices and <b>one incorrect</b> choice.</p>	<p><b>One correct</b> choice and <b>one incorrect</b> choice.</p>	<p><b>Only incorrect</b> choices.</p> <p><b>Two or more incorrect</b> choices with <b>some correct</b> choices.</p>	

Problem 3 <span style="float: right;">Standards: MA.7.DP.2.4, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete explanation</b>.</p> <p>10 or 11 are considered correct. Explanations vary. The probability of the spinner landing on Abdel is <math>\frac{1}{5}</math>. That means the best estimate for how many spins out of 52 will land on Abdel is <math>\frac{1}{5}</math> of 52, or 10.4, which rounds to 10.</p>	<p><b>Correct</b> response with <b>minor flaws in explanation</b>.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete explanation</b>.</p> <p><b>Incorrect</b> response with <b>explanation</b> that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no explanation</b>.</p>

Problem 4a <span style="float: right;">Standard: MA.7.DP.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>\frac{1}{3}</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{4}</math> may have used the wrong spinner as the size of the sample space.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b <span style="float: right;">Standard: MA.7.DP.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>\frac{3}{4}</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{4}</math> may have written the probability of getting hot fudge as a topping.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5a			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: All the students at Rudra's school</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "the school" may not fully understand who or what about the school makes up the population.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "longer lunch and longer school day" may have written the subject of interest instead of the population.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "20 students" may not understand the difference between sample and population.</p>

Problem 5b			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response: About 150 students</p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a calculation error when applying the ratio <math>\frac{12}{20}</math> to the population of the school.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write 21 may have calculated <math>\frac{250}{12}</math>.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and complete explanation.</p> <p>Less confident. Explanations vary. In Rudra's first sample, over 50% of students agreed. In his second sample, less than 50% agreed. This means that the variation is large, which makes me less confident in my prediction.</p>	<p><b>Correct</b> response with minor flaws in explanation.</p> <p><b>Incorrect</b> response with logical and complete explanation.</p> <p>Students who select <i>More confident</i> may have been paying attention to the number of samples drawn rather than the variability between samples.</p>	<p><b>Correct</b> response with incomplete explanation.</p> <p><b>Incorrect</b> response with explanation that shows partial understanding.</p>	<p><b>Incorrect</b> response with no explanation.</p>

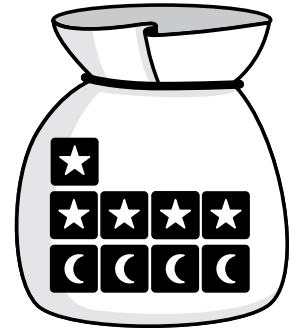
# End-of-Unit Assessment

**Unit 10**

1. You pick a block out of this bag without looking.

What is the probability of picking a block that is *not* a star?

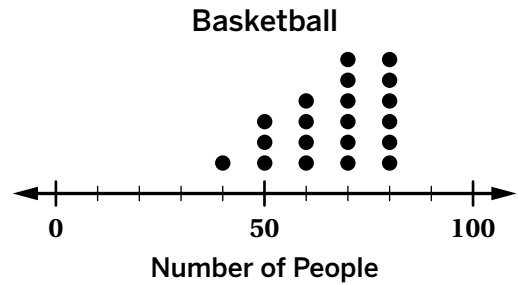
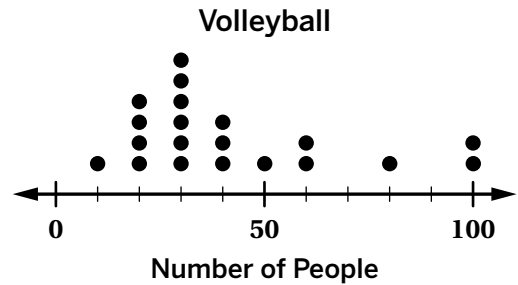
- A.  $\frac{1}{4}$       B.  $\frac{4}{5}$       C.  $\frac{4}{9}$       D.  $\frac{5}{9}$



2. Ebony is curious: do more people attend volleyball or basketball games?

She went to a random sample of 40 games (20 volleyball and 20 basketball). At each game, Ebony recorded the number of people.

Based on the data in the dot plots, select *all* of the true statements.



- A. Basketball games tend to get more people to attend than volleyball games.
- B. Volleyball games tend to get more people to attend than basketball games.
- C. Basketball games have a more consistent number of people than volleyball games.
- D. Volleyball games have a more consistent number of people than basketball games.
- E. All basketball games have more people attending than volleyball games.

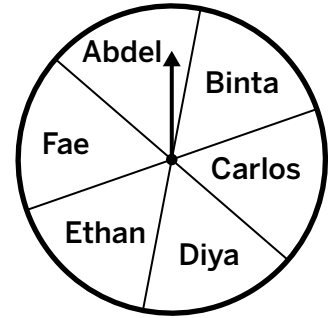
**End-of-Unit Assessment (continued)**

**Unit 10**

3. Six friends share an apartment. Each day, they use this spinner with 6 equal sections to determine who will wash the dishes.

Estimate the number of times Binta will be chosen to do the dishes in a month (about 30 days).

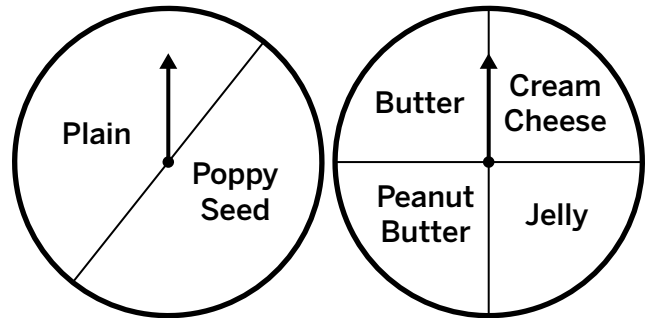
Explain your thinking.



4. The Spin N' Dine Restaurant sells bagels. You can spin to either select one random type of bagel OR one random spread.

a What is the probability of getting a plain bagel on your spin?

b What is the probability of NOT getting cream cheese as a topping on your spin?



5. Darius thinks school should start later and wants to know if others agree. He surveys a random sample of 40 students and finds that 26 of them agree.

a What is the population for Darius's question?

b If the school has 240 students, about how many do you predict would agree?

c The next day, Darius surveys another 10 random students and finds that 6 of them agree. Does this make you more or less confident in your prediction?

Explain your thinking.

Standard	MA.7.DP.1.2	MA.7.DP.1.3	MA.7.DP.2.2	MA.7.DP.2.3	MA.7.DP.2.4
Problem(s)	2	5a, 5b, 5c	1	4a, 4b	3

Problem 1			Standard: MA.7.DP.2.2
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Correct choice:</p> <p><math>\frac{4}{9}</math></p>			<p>Incorrect choice.</p> <p>Students who select <math>\frac{4}{5}</math> may have compared total moons to total stars.</p> <p>Students who select <math>\frac{5}{9}</math> may have determined the probability of selecting a star.</p>

Problem 2			Standards: MA.7.DP.1.2, MTR.6.1
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p>Both correct choices and no incorrect choices.</p> <ul style="list-style-type: none"> <li>Basketball games tend to get more people to attend than volleyball games.</li> <li>Basketball games have a more consistent number of people than volleyball games.</li> </ul>	<p>One correct choice and no incorrect choices.</p> <p>Both correct choices and one incorrect choice.</p>	<p>One correct choice and one incorrect choice.</p>	<p>Only incorrect choices.</p> <p>Two or more incorrect choices with some correct choices.</p>

Problem 3 <span style="float: right;">Standards: MA.7.DP.2.4, MTR.4.1</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete explanation</b>.</p> <p>5 times.  <i>Explanations vary.</i>                      A month has about 30 days. The probability of the spinner landing on Binta is <math>\frac{1}{6}</math>. That means the best estimate for how many spins in a month will land on Binta is about <math>\frac{1}{6}</math> of 30, or 5.</p>	<p><b>Correct</b> response with <b>minor flaws in explanation</b>.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p>	<p><b>Correct</b> response with <b>incomplete explanation</b>.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no explanation</b>.</p>

Problem 4a <span style="float: right;">Standard: MA.7.DP.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>\frac{1}{2}</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{4}</math> may have used the wrong spinner as the size of the sample space.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 4b <span style="float: right;">Standard: MA.7.DP.2.3</span>			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:</p> <p><math>\frac{3}{4}</math></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{1}{4}</math> may have written the probability of getting cream cheese as a topping.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5a			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>All the students at Darius's school</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "the school" may not fully understand who or what about the school makes up the population.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "school start time" may have written the subject of interest instead of the population.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "40 students" may not understand the difference between sample and population.</p>

Problem 5b			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>About 156 students</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a calculation error when applying the ratio <math>\frac{26}{40}</math> to the population of the school.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{240}{26}</math> may have divided the total number of students by the number who agreed in Darius's survey.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete explanation</b>.</p> <p><b>More confident. Explanations vary. In Darius's first sample, over 60% of the students agreed. In his second sample, 60% also agreed. This means that the variation is small, which makes me more confident in my prediction.</b></p>	<p><b>Correct</b> response with <b>minor flaws in explanation</b>.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who select <i>Less confident</i> may have been paying attention to the number of samples drawn rather than the variability between samples.</p>	<p><b>Correct</b> response with <b>incomplete explanation</b>.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no explanation</b>.</p>

Problem 5a			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>All the students at Darius's school</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>Students who write "the school" may not fully understand who or what about the school makes up the population.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write "school start time" may have written the subject of interest instead of the population.</p>	<p>Response shows <b>limited understanding</b>.</p> <p>Students who write "40 students" may not understand the difference between sample and population.</p>

Problem 5b			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response:  <b>About 156 students</b></p>	<p>Response shows <b>conceptual understanding</b> with minor errors.</p> <p>E.g., Response includes a calculation error when applying the ratio <math>\frac{26}{40}</math> to the population of the school.</p>	<p>Response shows <b>incomplete understanding</b> with significant errors.</p> <p>Students who write <math>\frac{240}{26}</math> may have divided the total number of students by the number who agreed in Darius's survey.</p>	<p>Response shows <b>limited understanding</b>.</p>

Problem 5c			
Standards: MA.7.DP.1.3, MTR.6.1			
4 Meeting	3 Approaching	2 Developing	1 Beginning
<p><b>Correct</b> response and <b>complete explanation</b>.</p> <p><b>More confident. Explanations vary. In Darius's first sample, over 60% of the students agreed. In his second sample, 60% also agreed. This means that the variation is small, which makes me more confident in my prediction.</b></p>	<p><b>Correct</b> response with <b>minor flaws in explanation</b>.</p> <p><b>Incorrect</b> response with logical and <b>complete explanation</b>.</p> <p>Students who select <i>Less confident</i> may have been paying attention to the number of samples drawn rather than the variability between samples.</p>	<p><b>Correct</b> response with <b>incomplete explanation</b>.</p> <p><b>Incorrect</b> response with explanation that shows <b>partial understanding</b>.</p>	<p><b>Incorrect</b> response with <b>no explanation</b>.</p>

Unit 10

**Show What You  
Know PDFs**

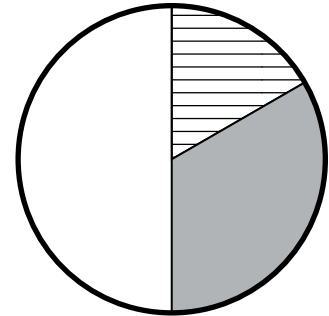


# Show What You Know



10.01

Here is a new spinner. Write the letter that matches the likelihood of each event happening on one spin. Some letters may be used more than once and some may not be used at all.



- |  |                                 |
|--|---------------------------------|
| ..... Landing on a plain area.                           | <b>a.</b> Impossible            |
| ..... Landing on an area with polka dots.                | <b>b.</b> Unlikely              |
| ..... Landing on a striped area.                         | <b>c.</b> Equally likely as not |
| ..... Landing on a plain white, striped, or shaded area. | <b>d.</b> Likely                |
|  | <b>e.</b> Certain               |

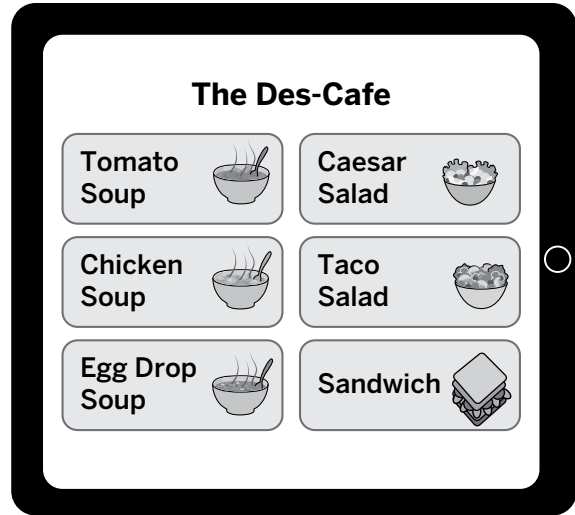
# Show What You Know



10.02

Here is a menu from a restaurant.

If one item is selected at random, what is the probability that the item is a salad?



# Show What You Know

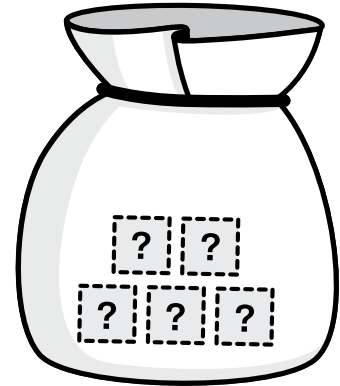
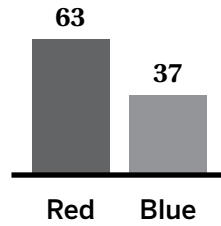


10.03

A new bag has 5 blocks. Some are red and some are blue.

Based on these results, how many blocks are likely to be red? Show or explain your thinking.

**Total Picks: 100**



# Show What You Know

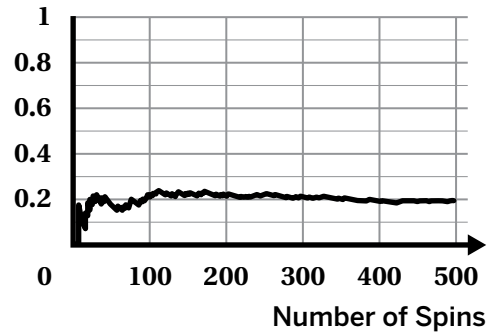


10.04

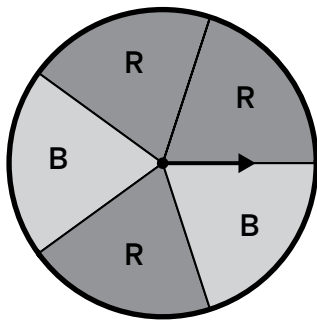
The graph shows the relative frequency of spinning red over 500 spins.

Which spinner is most likely to have produced this graph?

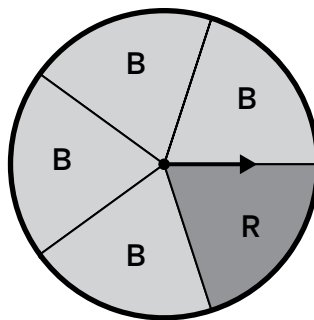
**Relative Frequency of Spinning Red**



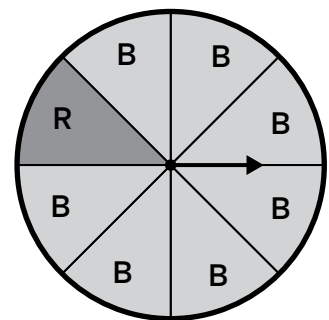
A.



B.



C.



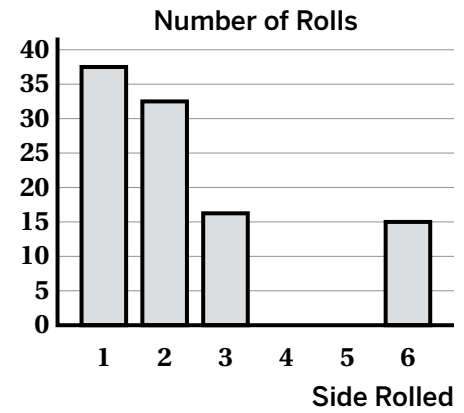
Explain your thinking.

**Show What You Know****10.05**

This graph shows the results of 100 rolls with an unfair number cube.

Based on the results, which is the most likely probability of rolling a one?

- A.  $\frac{1}{2}$
- B.  $\frac{1}{3}$
- C.  $\frac{1}{4}$
- D.  $\frac{1}{6}$



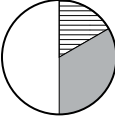
Explain your thinking.

### Show What You Know Lesson 1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 10.01

Here is a new spinner. Write the letter that matches the likelihood of each event happening on one spin. Some letters may be used more than once and some may not be used at all.



\_\_\_\_c\_\_\_\_ Landing on a plain area.      a. Impossible  
 \_\_\_\_a\_\_\_\_ Landing on an area with polka dots.      b. Unlikely  
 \_\_\_\_b\_\_\_\_ Landing on a striped area.      c. Equally likely as not  
 \_\_\_\_e\_\_\_\_ Landing on a plain white, striped, or shaded area.      d. Likely  
    e. Certain

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### Show What You Know Lesson 2

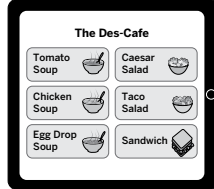
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 10.02

Here is a menu from a restaurant.

If one item is selected at random, what is the probability that the item is a salad?

$\frac{2}{6}$  (or equivalent, such as  $\frac{1}{3}$  or 33%)



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### Show What You Know Lesson 3

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 10.03

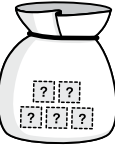
A new bag has 5 blocks. Some are red and some are blue.

Based on these results, how many blocks are likely to be red? Show or explain your thinking.

3 blocks. Responses vary. I multiplied the ratio of  $\frac{63}{100}$  and 5 to determine the number of blocks out of 5 that would be red. I got 3.15 and, since there are only whole blocks, I rounded down to 3 blocks.

Total Picks: 100

Red	Blue
63	37



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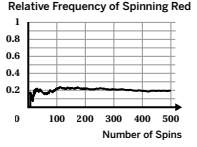
### Show What You Know Lesson 4

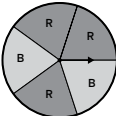
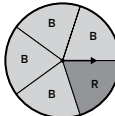
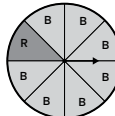
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know** 10.04

The graph shows the relative frequency of spinning red over 500 spins.

Which spinner is most likely to have produced this graph?



A.       B.       C. 


Explain your thinking.

Explanations vary. The graph shows that after many spins, the relative frequency gets close to 0.2. This means the probability of red is likely  $\frac{1}{5}$ . A spinner with 1 red section out of 5 has a  $\frac{1}{5}$  probability of landing on red.

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Show What You Know Lesson 5

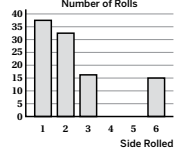
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Show What You Know**  **10.05**

This graph shows the results of 100 rolls with an unfair number cube.

Based on the results, which is the most likely probability of rolling a one?

A.  $\frac{1}{2}$   
 B.  $\frac{1}{3}$   
 C.  $\frac{1}{4}$   
 D.  $\frac{1}{6}$



Side Rolled	Number of Rolls
1	38
2	32
3	18
4	18
5	18
6	15

Explain your thinking.

*Explanations vary. The results suggest that the number cube has one dot on 2 of its 6 sides. That means the probability of rolling a one is  $\frac{2}{6}$  or  $\frac{1}{3}$ .*

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# Lesson Resources



Unit 1

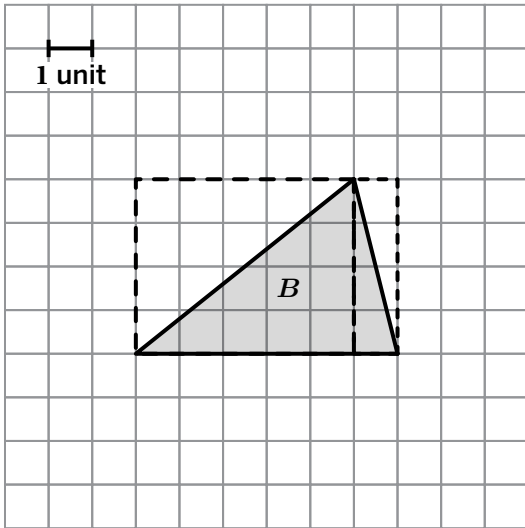
# **Activity Sheets and Cards**



Name: ..... Date: ..... Period: .....

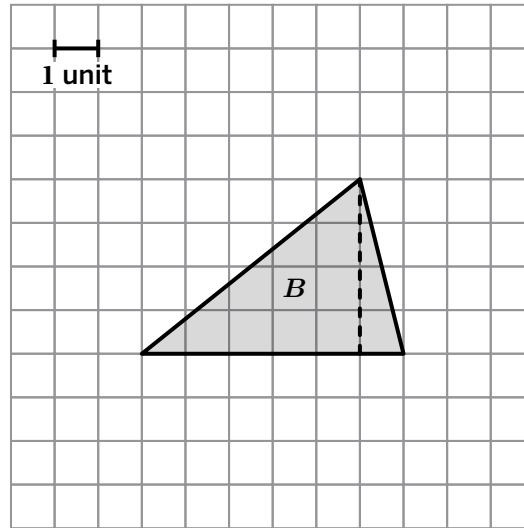
# Area Strategies

Here are two strategies for calculating the area of triangle B. Consider these strategies for your discussion.



Area of rectangles:  $(4 \cdot 5) + (4 \cdot 1) = 20 + 4 = 24$  square units

Area of triangle B:  $\frac{1}{2}(24) = 12$  square units



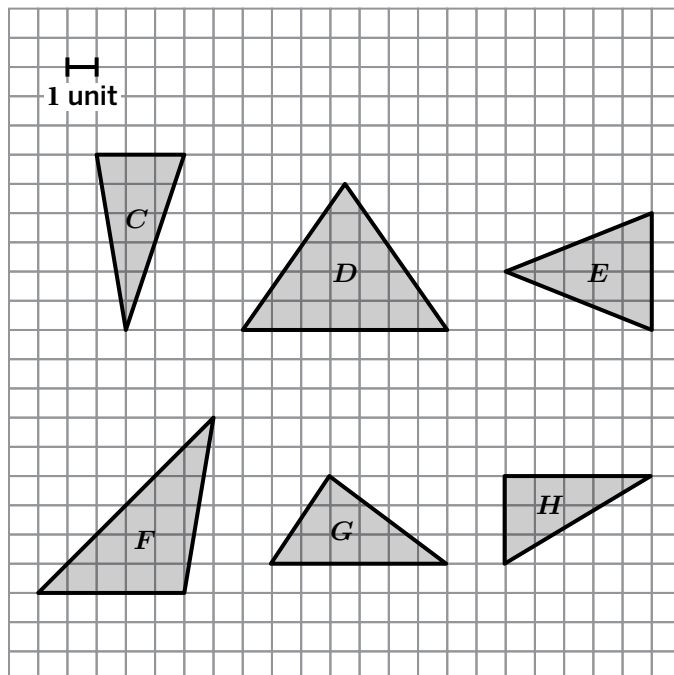
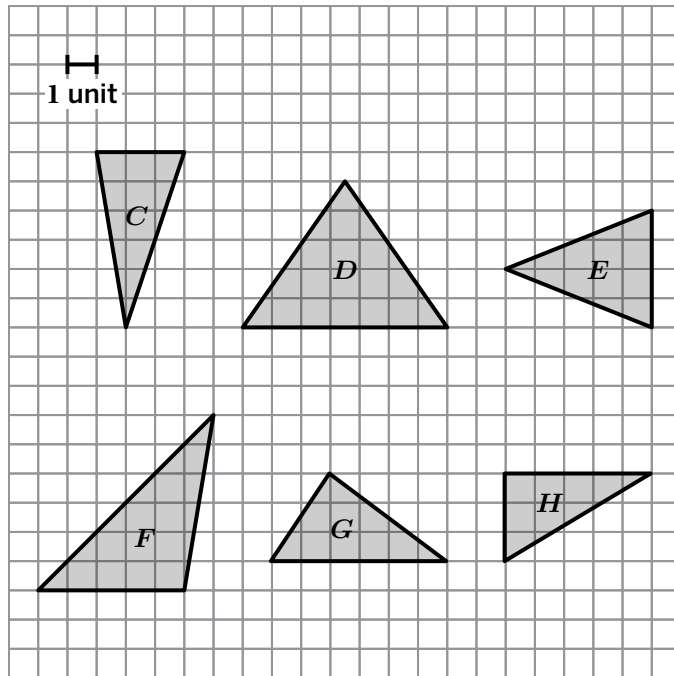
Area of triangle B:  $\left(\frac{1}{2} \cdot 5 \cdot 4\right) + \left(\frac{1}{2} \cdot 1 \cdot 4\right) = 10 + 2 = 12$  square units

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Lots of Triangles

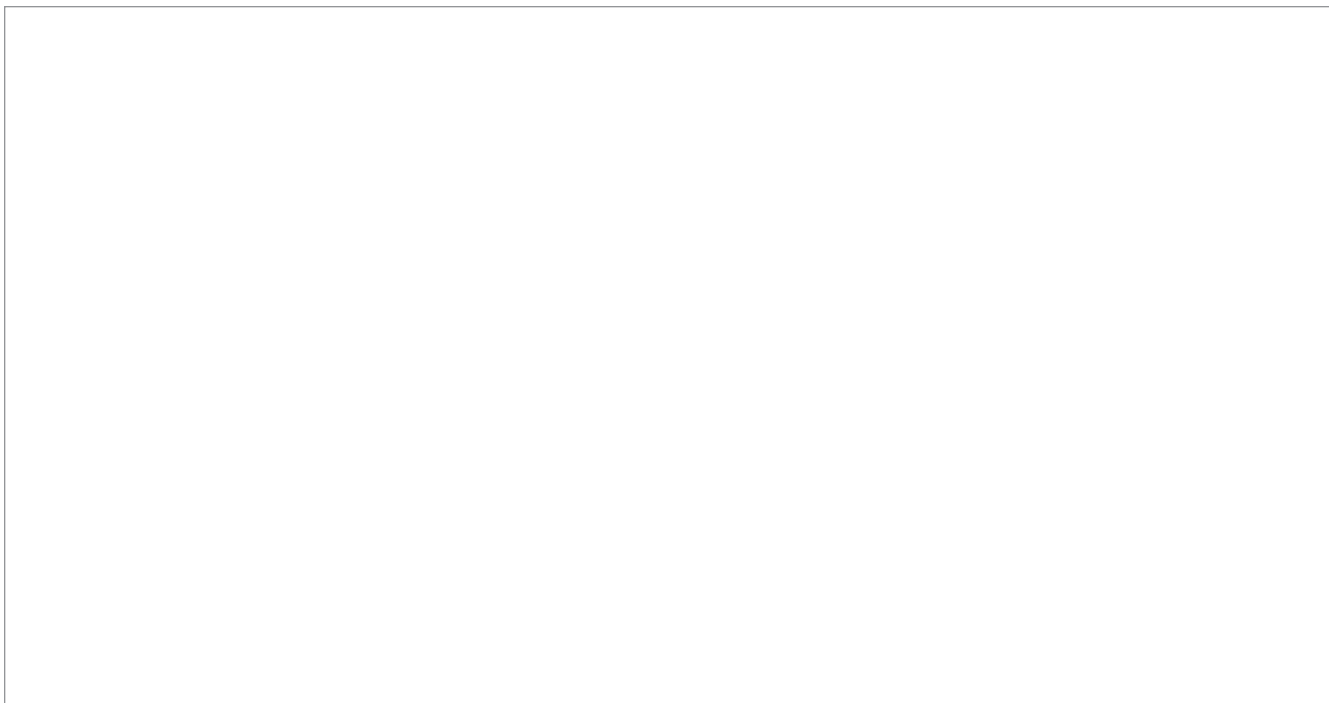
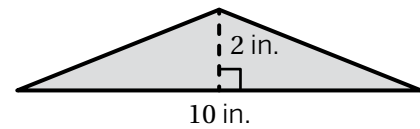
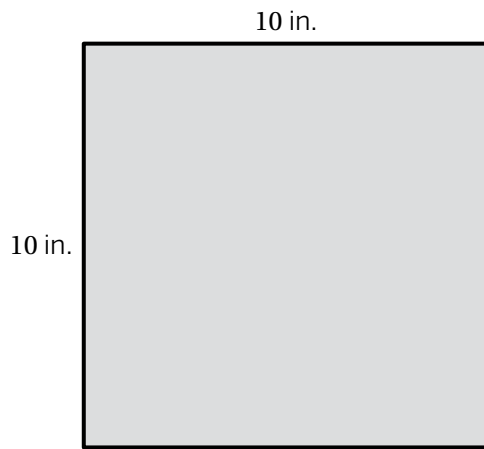
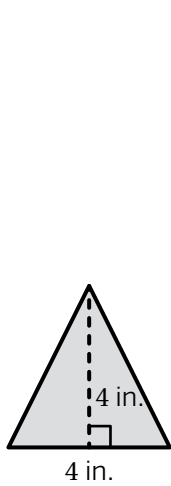
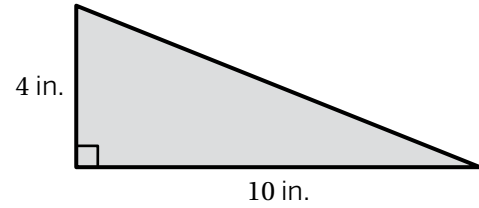
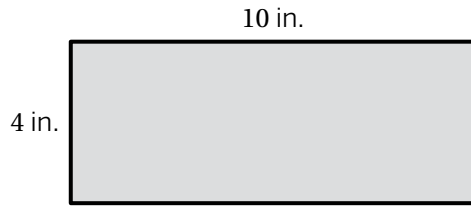
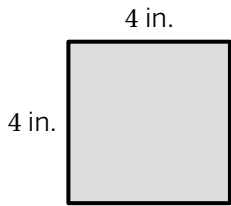
Cut out the bottom set of triangles and use them to form parallelograms with the top set of triangles. As you create parallelograms, consider discussing these questions with your classmates:

- Which triangle did you start with?
- Where did you get stuck?
- What did you try?
- Which strategies were most helpful to you?



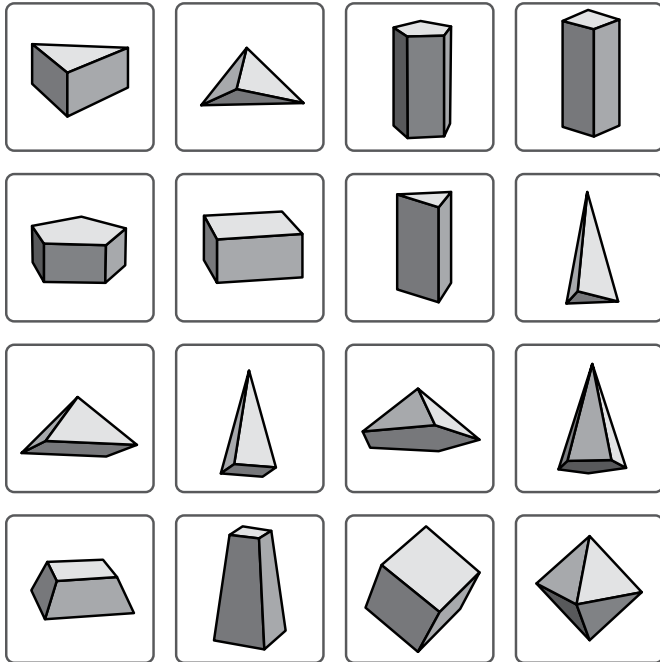
# Challenge Creator

- Create the outline of a figure by connecting three, four, or five of these shapes. Include on the figure any necessary dimensions to calculate the area.
- Calculate the area of your figure in your Student Edition. (Don't write it on this paper!)

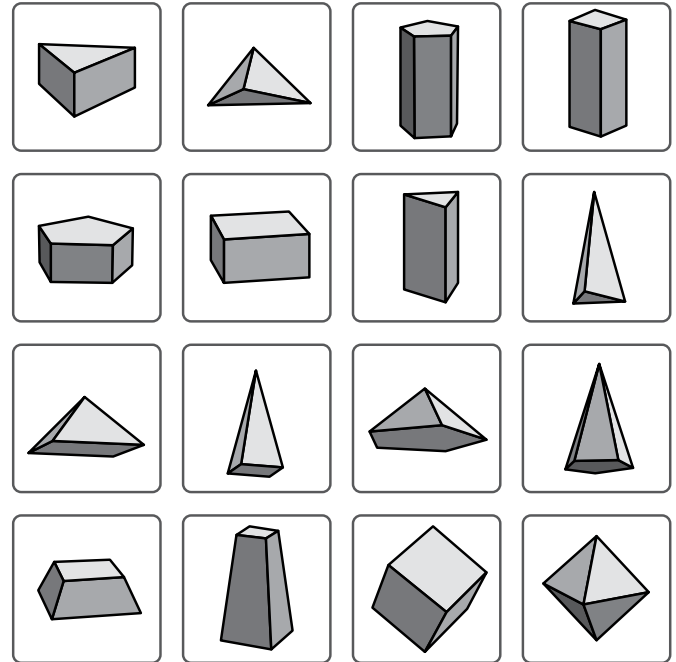


# Warm-Up, Set A

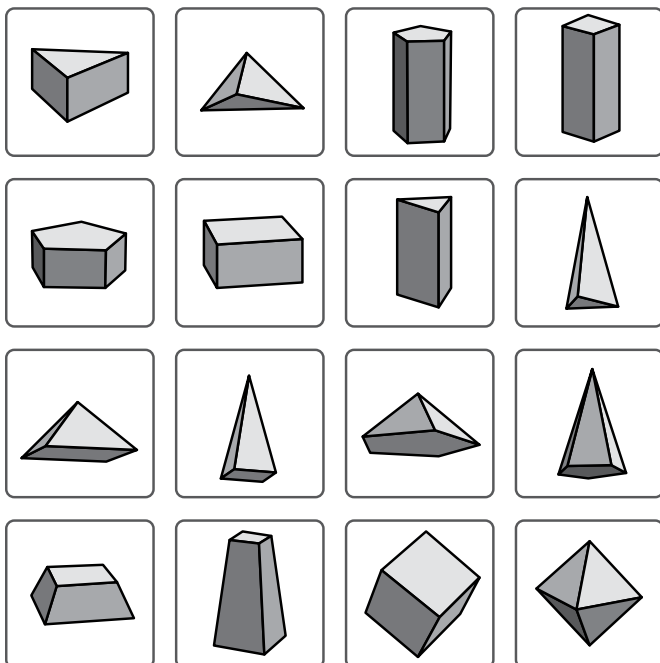
## Round 1



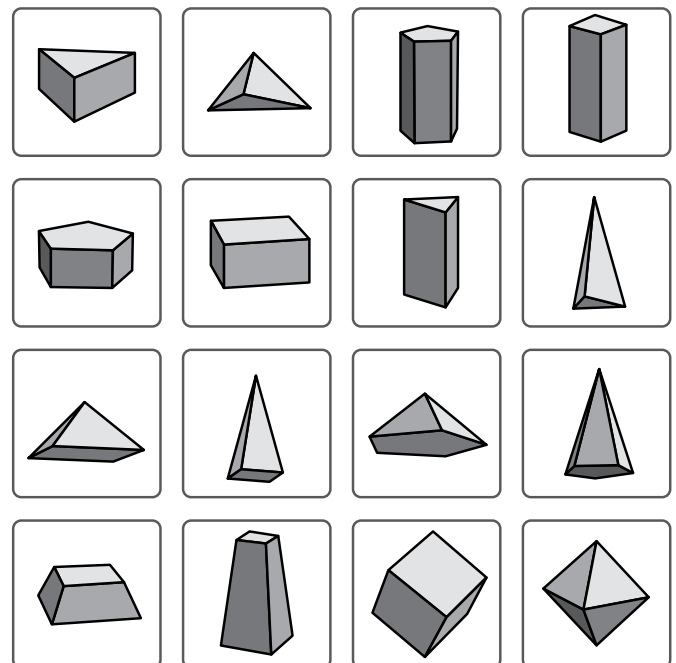
## Round 2



## Round 3

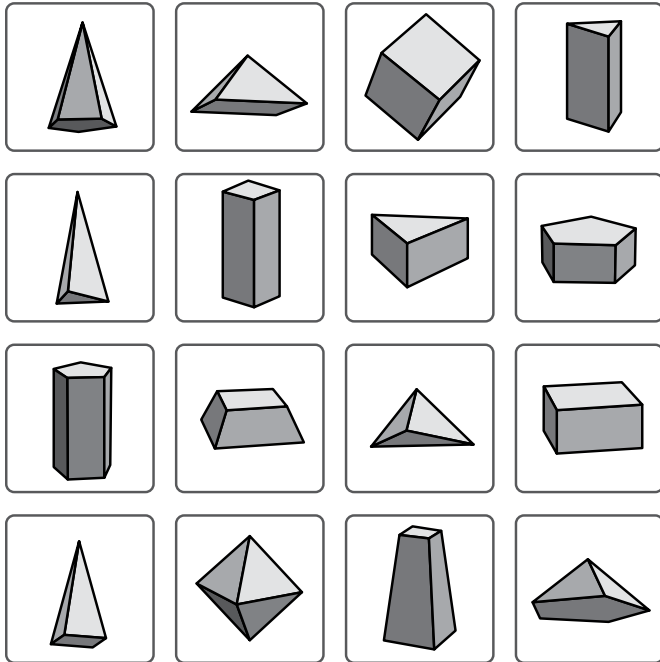


## Round 4

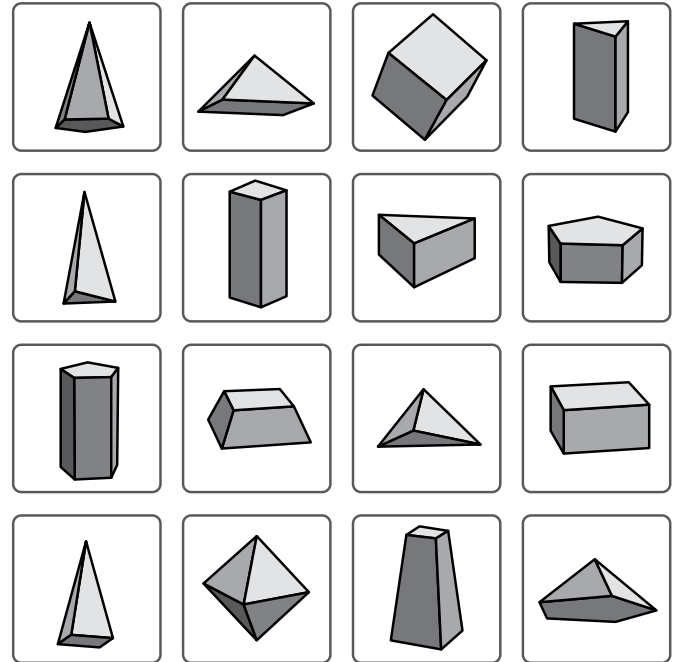


# Warm-Up, Set B

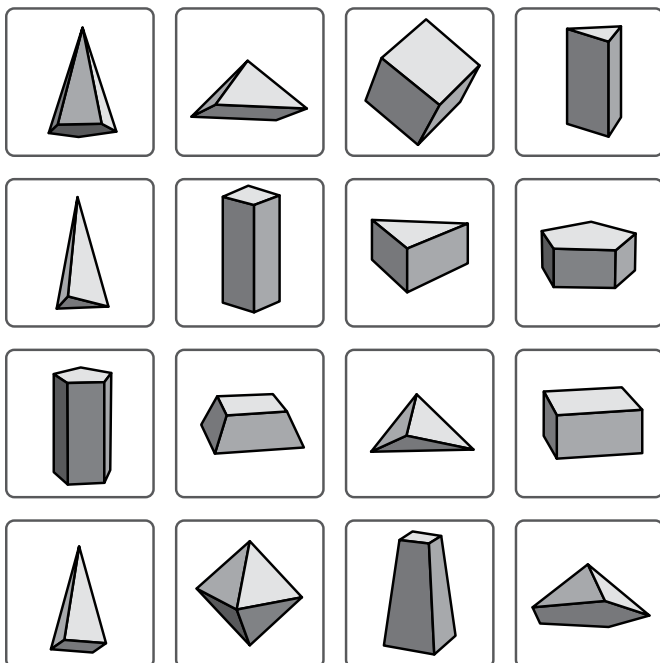
## Round 1



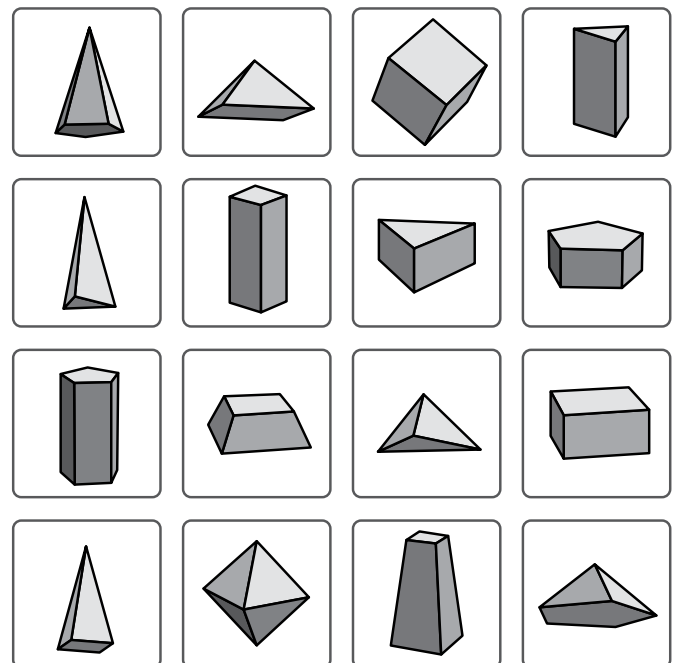
## Round 2



## Round 3



## Round 4

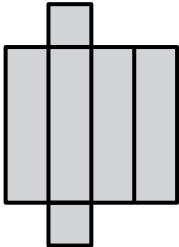


# Nets and Polyhedra

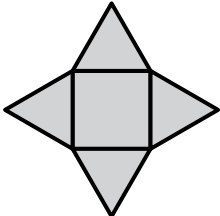
✂️ **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each pair of students one set.

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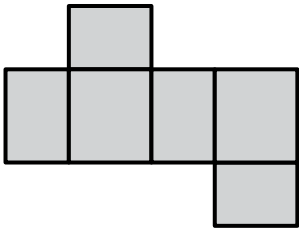
**Card 1**



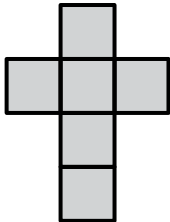
**Card 2**



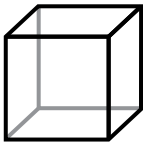
**Card 3**



**Card 4**



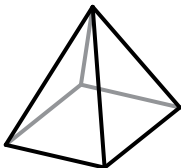
**Card 5**



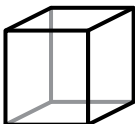
**Card 6**



**Card 7**



**Card 8**



# Make Polyhedra

Cut out each of these nets along the solid lines and fold them along the dotted lines to assemble the polyhedra.

**1 unit**

**A.**

**B.**

**C.**



# Unit 2

## **Activity Sheets and Cards**



Name: ..... Date: ..... Period: .....

# More Multiples

1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30  
31 32 33 34 35 36 37 38 39 40  
41 42 43 44 45 46 47 48 49 50  
51 52 53 54 55 56 57 58 59 60  
61 62 63 64 65 66 67 68 69 70  
71 72 73 74 75 76 77 78 79 80  
81 82 83 84 85 86 87 88 89 90  
91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30  
31 32 33 34 35 36 37 38 39 40  
41 42 43 44 45 46 47 48 49 50  
51 52 53 54 55 56 57 58 59 60  
61 62 63 64 65 66 67 68 69 70  
71 72 73 74 75 76 77 78 79 80  
81 82 83 84 85 86 87 88 89 90  
91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30  
31 32 33 34 35 36 37 38 39 40  
41 42 43 44 45 46 47 48 49 50  
51 52 53 54 55 56 57 58 59 60  
61 62 63 64 65 66 67 68 69 70  
71 72 73 74 75 76 77 78 79 80  
81 82 83 84 85 86 87 88 89 90  
91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10  
11 12 13 14 15 16 17 18 19 20  
21 22 23 24 25 26 27 28 29 30  
31 32 33 34 35 36 37 38 39 40  
41 42 43 44 45 46 47 48 49 50  
51 52 53 54 55 56 57 58 59 60  
61 62 63 64 65 66 67 68 69 70  
71 72 73 74 75 76 77 78 79 80  
81 82 83 84 85 86 87 88 89 90  
91 92 93 94 95 96 97 98 99 100

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Sort 'em

Use this set of problems for Activity 1.

Problem A	Problem B
<p>Metropolis has two animal shelters.</p> <p>The Metro Shelter has <input type="checkbox"/> labradors and <input type="checkbox"/> golden retrievers. Shelteropolis has <input type="checkbox"/> labradors.</p> <p>How many golden retrievers do you think Shelteropolis has?</p>	<p>Metropolis's Disaster Relief Center stocks <input type="checkbox"/> flashlight for every <input type="checkbox"/> people who live in the city, plus <input type="checkbox"/> extras.</p> <p>If they currently have <input type="checkbox"/> flashlights, how many flashlights do you think they would need if the population doubles?</p>
Problem C	Problem D
<p>Aditi works at the Metropolis Recreation Center and gets paid minimum wage.</p> <p>If Aditi earns <input type="checkbox"/> in <input type="checkbox"/> hours, how many hours do you think Aditi would have to work in order to pay her rent of <input type="checkbox"/>?</p>	<p>Metropolis has <input type="checkbox"/> people and <input type="checkbox"/> hospitals.</p> <p>If the population grows to <input type="checkbox"/> people, would you recommend that the city plan to have <input type="checkbox"/> hospitals?</p>
Problem E	Problem F
<p>Karima is walking to the Metropolis Train Station.</p> <p>She was able to walk <input type="checkbox"/> blocks in <input type="checkbox"/> minutes. She needs to walk <input type="checkbox"/> more blocks and stop to buy a train ticket before she gets on the train.</p> <p>Do you think Karima will be able to catch a train that leaves in <input type="checkbox"/> minutes?</p>	<p>Metropolis's compost facility uses worms to consume food waste.</p> <p>One pound of worms can consume <input type="checkbox"/> pounds of food waste per week.</p> <p>The facility aims to break down <input type="checkbox"/> pounds of food waste per week. How many pounds of worms do you think they should have?</p>

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Closer Look

Use this set of problems for Activities 2 and 3.

Problem A	Problem B
<p>Metropolis has two animal shelters.</p> <p>The Metro Shelter has 3 labradors and 2 golden retrievers. Shelteropolis has 5 labradors.</p> <p>How many golden retrievers do you think Shelteropolis has?</p>	<p>Metropolis's Disaster Relief Center stocks 1 flashlight for every 50 people who live in the city, plus 100 extras.</p> <p>If they currently have 3,100 flashlights, how many flashlights do you think they would need if the population doubles?</p>
Problem C	Problem D
<p>Aditi works at the Metropolis Recreation Center and gets paid minimum wage.</p> <p>If Aditi earns \$87 in 12 hours, how many hours do you think Aditi would have to work in order to pay her rent of \$600?</p>	<p>Metropolis has 150,000 people and 3 hospitals.</p> <p>If the population grows to 250,000 people, would you recommend that the city plan to have 6 hospitals?</p>
Problem E	Problem F
<p>Karima is walking to the Metropolis Train Station.</p> <p>She was able to walk 2 blocks in 5 minutes. She needs to walk 9 more blocks and stop to buy a train ticket before she gets on the train.</p> <p>Do you think Karima will be able to catch a train that leaves in 20 minutes?</p>	<p>Metropolis's compost facility uses worms to consume food waste.</p> <p>One pound of worms can consume 4 pounds of food waste per week.</p> <p>The facility aims to break down 2,000 pounds of food waste per week. How many pounds of worms do you think they should have?</p>



Unit 3

**Activity Sheets  
and Cards**



# Describe It



**Directions:** Make one copy per pair of students. Then pre-cut the 12 cards and give each pair of students one set.

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## Card 1

1 kilogram (kg)

## Card 2

1 ounce (oz)

## Card 3

1 millimeter (mm)

## Card 4

1 mile (mi)

## Card 5

1 liter (L)

## Card 6

1 gram (g)

## Card 7

1 kilometer (km)

## Card 8

1 pound (lb)

## Card 9

1 cup

## Card 10

1 milliliter (mL)


## Card 11

1 gallon (gal)

## Card 12

1 centimeter (cm)

# Match It

 **Directions:** Make one copy per pair of students. Then pre-cut the 12 cards and give each pair of students one set.

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## Card A



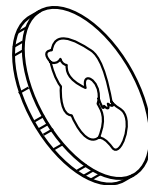
Distance walked in  
10 minutes

## Card B



Weight of a paper clip

## Card C



Thickness of a dime

## Card D



Volume of milk in  
a large milk jug

## Card E



Weight of a hooded  
sweatshirt

## Card F



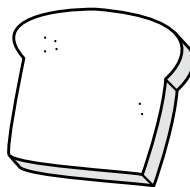
Volume of soda in a large  
soda bottle that is half full

## Card G



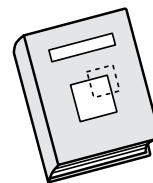
Distance run in 10 minutes

## Card H



Weight of a slice of bread

## Card I



Weight of a textbook

## Card J



Volume of water in  
a raindrop

## Card K



Width of a pinky finger

## Card L



Volume of milk in a school  
milk carton

Name: ..... Date: ..... Period: .....


# My Challenge

Record the weight and the cost of a small soft serve.

Then record the *weight* of a medium soft serve and the *cost* of a large soft serve.

	Weight (oz)	Cost (dollars)
Small		
Medium		
Large		

# Card Sort: What's Missing?

 **Directions:** Make one copy per four students. Then pre-cut the cards and give each pair one set of Cards 1–5.

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## Card 1

Price (\$)	Percentage (%)
40	100
4	10
20	50

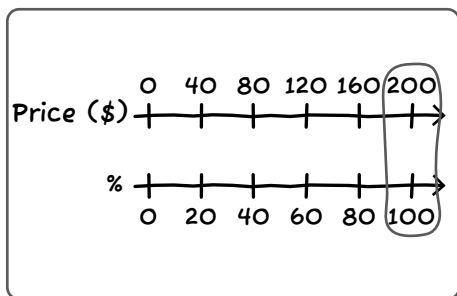
Operations shown:  $\times \frac{1}{10}$  (40 to 4),  $\times 5$  (4 to 20),  $\times \frac{1}{10}$  (100 to 10),  $\times 5$  (10 to 50)

## Card 1

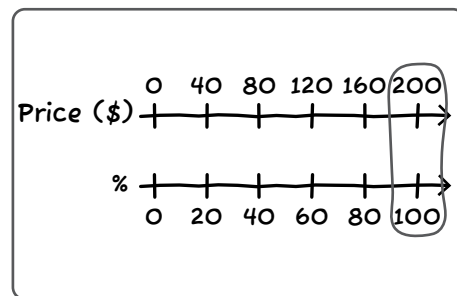
Price (\$)	Percentage (%)
40	100
4	10
20	50

Operations shown:  $\times \frac{1}{10}$  (40 to 4),  $\times 5$  (4 to 20),  $\times \frac{1}{10}$  (100 to 10),  $\times 5$  (10 to 50)

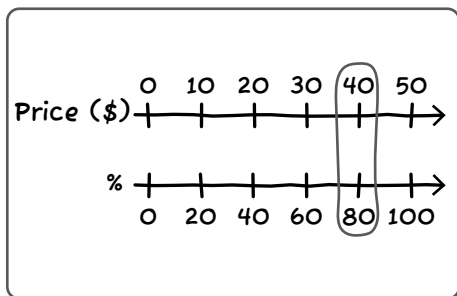
## Card 2



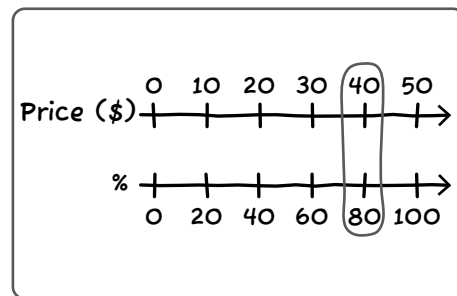
## Card 2



## Card 3



## Card 3



## Card 4

50%

## Card 4

50%

## Card 5

\$8.00

## Card 5

\$8.00

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# A County as a Village

Here is some information about five counties in Florida in the year 2020. Use this information to make a poster.

<p>Population of Miami-Dade County: 2,702 thousand</p> <ul style="list-style-type: none"> <li>59 out of 100 people have a job.</li> <li>2% are military veterans.</li> <li>524 thousand people are under 18 years old.</li> <li>22 out of 25 people lived in the same house 1 year ago.</li> </ul> <p>Sources: World Bank, Helgi Library, WorldData.info</p>	<p>Population of Escambia County: 322 thousand</p> <ul style="list-style-type: none"> <li>56 out of 100 people have a job.</li> <li>14% are military veterans.</li> <li>64 thousand people are under 18 years old.</li> <li>21 out of 25 people lived in the same house 1 year ago.</li> </ul> <p>Sources: World Bank, Ministry of Public Security (China), WorldData.info</p>
<p>Population of Lake County: 384 thousand</p> <ul style="list-style-type: none"> <li>50 out of 100 people have a job.</li> <li>10% are military veterans.</li> <li>71 thousand people are under 18 years old.</li> <li>22 out of 25 people lived in the same house 1 year ago.</li> </ul> <p>Sources: World Bank, CEIC, WorldData.info</p>	<p>Population of Hillsborough County: 1,460 thousand</p> <ul style="list-style-type: none"> <li>66 out of 100 people have a job.</li> <li>8% are military veterans.</li> <li>321 thousand people are under 18 years old.</li> <li>21 out of 25 people lived in the same house 1 year ago.</li> </ul> <p>Sources: World Bank, CEIC, WorldData.info</p>
<p>Population of Duval County: 996 thousand</p> <ul style="list-style-type: none"> <li>61 out of 100 people have a job.</li> <li>11% are military veterans.</li> <li>214 thousand people are under 18 years old.</li> <li>21 out of 25 people lived in the same house 1 year ago.</li> </ul> <p>Sources: World Bank, Federal Highway Administration, US Census Bureau</p>	



Unit 4

**Activity Sheets  
and Cards**



Name: ..... Date: ..... Period: .....

# Tape Diagrams

Use the tape diagrams to help with your thinking about fraction, decimal, or percent problems.  
Label your diagram.

0

0

0

0

0

0


0

0

0

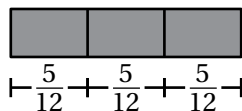
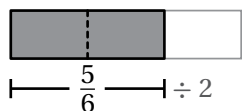
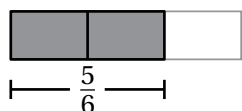
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# Card Sort: Equivalent Expressions

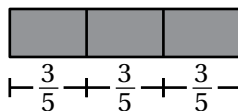
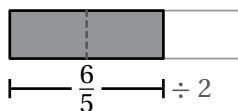
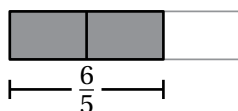
 **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each pair of students one set.

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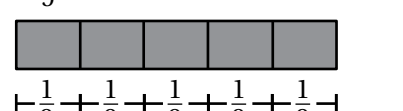
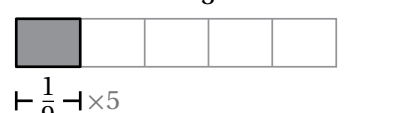
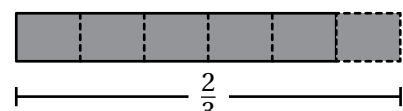
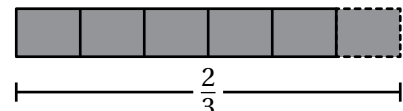
## Card 1



## Card 2



## Card 3



## Card 4

$$\frac{5}{6} \div \frac{2}{3}$$

## Card 5

$$1\frac{1}{5} \div \frac{2}{3}$$

## Card 6

$$\frac{2}{3} \div \frac{6}{5}$$

## Card 7

$$\frac{5}{6} \cdot \frac{3}{2}$$


## Card 8

$$\frac{6}{5} \cdot \frac{3}{2}$$

## Card 9

$$\frac{2}{3} \cdot \frac{5}{6}$$

# Card Sort: Match and Solve

 **Directions:** Make one copy per four pairs of students. Then pre-cut the cards and give each pair of students one set. There are four copies of the same set of cards on this page. The card set contains three expressions (Cards 1–3) and three answers (Cards 4–6).

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**Card 1**

$$\frac{3}{4} \div 1\frac{1}{2}$$

**Card 1**

$$\frac{3}{4} \div 1\frac{1}{2}$$

**Card 1**

$$\frac{3}{4} \div 1\frac{1}{2}$$

**Card 1**

$$\frac{3}{4} \div 1\frac{1}{2}$$

**Card 2**

$$\frac{3}{4} \cdot 1\frac{1}{2}$$

**Card 2**

$$\frac{3}{4} \cdot 1\frac{1}{2}$$

**Card 2**

$$\frac{3}{4} \cdot 1\frac{1}{2}$$

**Card 2**

$$\frac{3}{4} \cdot 1\frac{1}{2}$$

**Card 3**

$$1\frac{1}{2} \div \frac{3}{4}$$

**Card 3**

$$1\frac{1}{2} \div \frac{3}{4}$$

**Card 3**

$$1\frac{1}{2} \div \frac{3}{4}$$

**Card 3**

$$1\frac{1}{2} \div \frac{3}{4}$$

**Card 4**

$$\frac{9}{8}$$

**Card 4**

$$\frac{9}{8}$$

**Card 4**

$$\frac{9}{8}$$

**Card 4**

$$\frac{9}{8}$$

**Card 5**

$$2$$

**Card 5**

$$2$$

**Card 5**

$$2$$

**Card 5**

$$2$$

**Card 6**

$$\frac{1}{2}$$

**Card 6**

$$\frac{1}{2}$$

**Card 6**

$$\frac{1}{2}$$

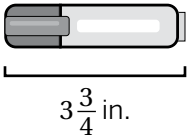
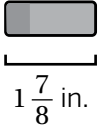
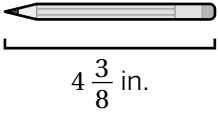
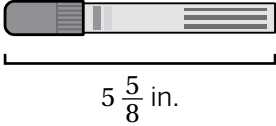
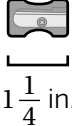
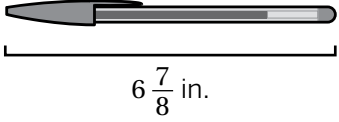
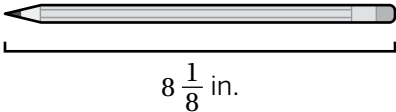
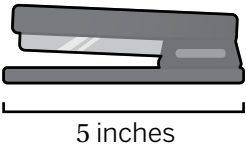
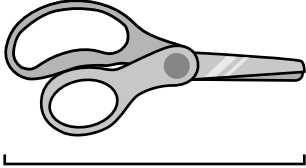

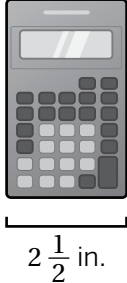
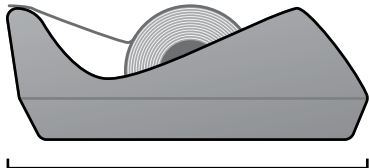
**Card 6**

$$\frac{1}{2}$$

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Comparing Classroom Objects



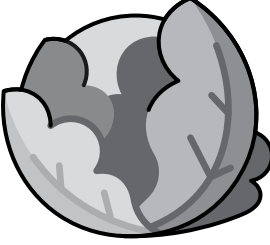


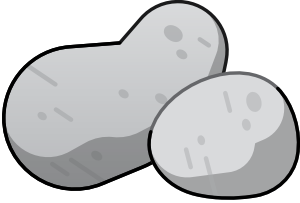
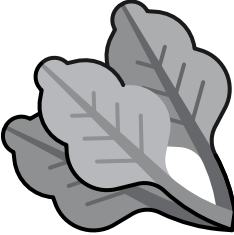
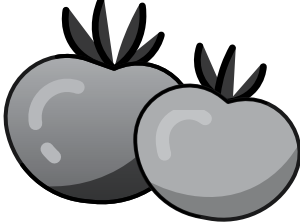
Select two classroom items to compare using the table in Problem 10.

<p><b>Highlighter</b></p>  <p><math>3\frac{3}{4}</math> in.</p>	<p><b>Eraser</b></p>  <p><math>1\frac{7}{8}</math> in.</p>	<p><b>Small pencil</b></p>  <p><math>4\frac{3}{8}</math> in.</p>
<p><b>Marker</b></p>  <p><math>5\frac{5}{8}</math> in.</p>	<p><b>Pencil sharpener</b></p>  <p><math>1\frac{1}{4}</math> in.</p>	<p><b>Red pen</b></p>  <p><math>6\frac{7}{8}</math> in.</p>
<p><b>Large pencil</b></p>  <p><math>8\frac{1}{8}</math> in.</p>	<p><b>Stapler</b></p>  <p>5 inches</p>	<p><b>Scissors</b></p>  <p><math>6\frac{1}{4}</math> in.</p>
<p><b>Glue bottle</b></p>  <p><math>3\frac{1}{8}</math> in.</p>	<p><b>Calculator</b></p>  <p><math>2\frac{1}{2}</math> in.</p>	<p><b>Tape dispenser</b></p>  <p><math>7\frac{1}{2}</math> in.</p>

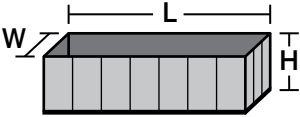
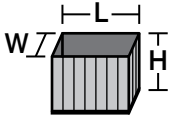
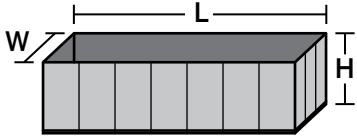
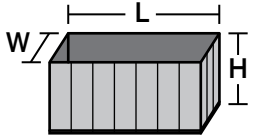
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Planter Planner

## Plant Options

<p><b>Carrots</b></p>  <p><math>\frac{1}{16}</math> square feet per plant <math>\frac{1}{2}</math> serving per plant</p>	<p><b>Flowers</b></p>  <p><math>\frac{1}{9}</math> square feet per plant 1 bouquet per plant</p>	<p><b>Lettuce</b></p>  <p><math>\frac{1}{4}</math> square feet per plant 9 servings per plant</p>	<p><b>Peppers</b></p>  <p>1 square feet per plant 12 servings per plant</p>
<p><b>Pole beans</b></p>  <p><math>\frac{1}{9}</math> square feet per plant 4 servings per plant</p>	<p><b>Potatoes</b></p>  <p><math>\frac{1}{4}</math> square feet per plant 6 servings per plant</p>	<p><b>Swiss Chard</b></p>  <p><math>\frac{1}{2}</math> square feet per plant 10 servings per plant</p>	<p><b>Tomatoes</b></p>  <p>2 square feet per plant 16 servings per plant</p>

## Planter Options

<p><b>Planter A</b></p>  <p>Width: <math>1\frac{1}{3}</math> feet Length: 12 feet Height: <math>\frac{2}{3}</math> feet</p>	<p><b>Planter B</b></p>  <p>Width: 4 feet Length: <math>3\frac{3}{4}</math> feet Height: <math>\frac{2}{3}</math> feet</p>	<p><b>Planter C</b></p>  <p>Width: <math>\frac{3}{4}</math> feet Length: 16 feet Height: <math>\frac{2}{3}</math> feet</p>	<p><b>Planter D</b></p>  <p>Width: 3 feet Length: <math>5\frac{2}{3}</math> feet Height: <math>\frac{2}{3}</math> feet</p>
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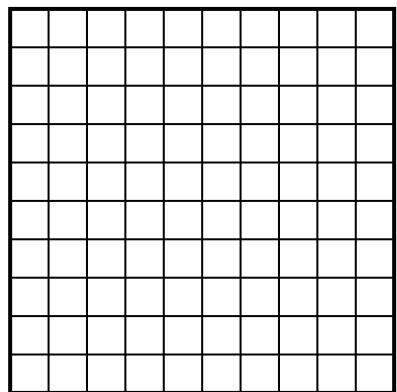
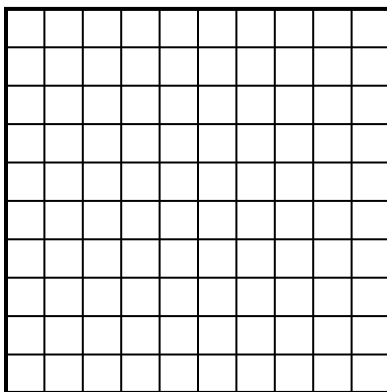
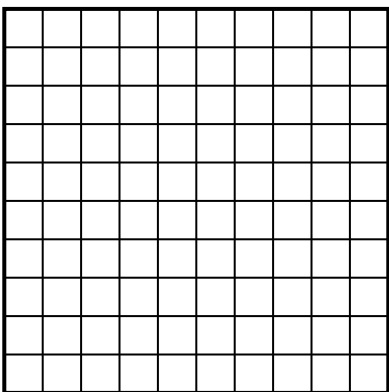
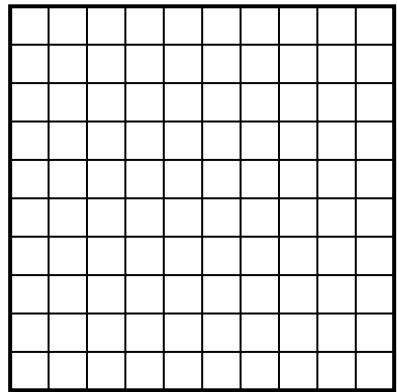
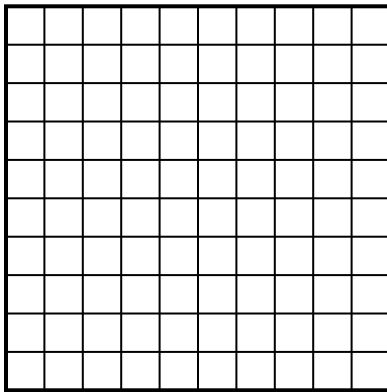
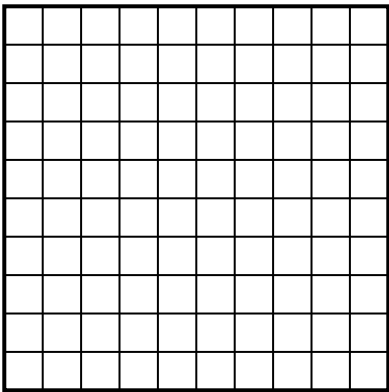
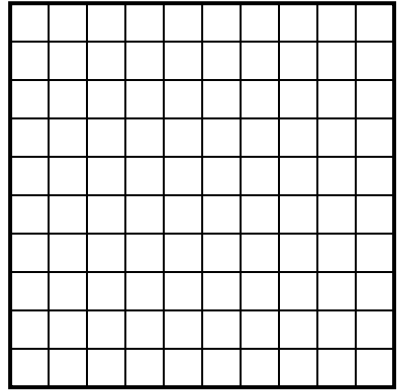
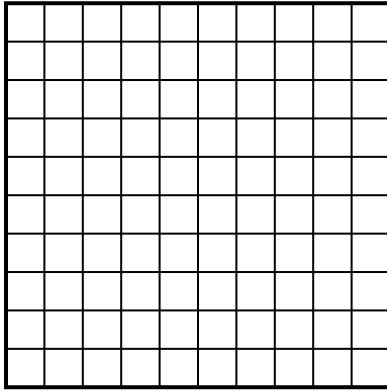
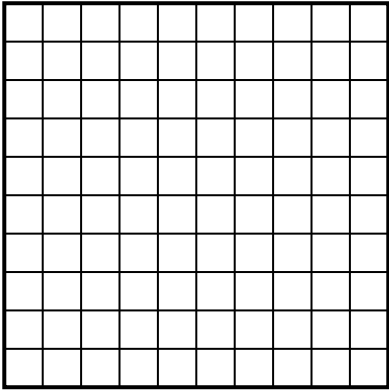
# Unit 5

## **Activity Sheets and Cards**



Name: ..... Date: ..... Period: .....

# Hundredths Charts



# Scavenger Hunt

△ Triangle Sheet

Answer

**12.28**

**Problem:**

Calculate  $2.8 \cdot 0.41$ .

# Scavenger Hunt

★ Star Sheet

Answer

**1.148**

**Problem:**

Multiply  $19 \cdot 0.72$ .

# Scavenger Hunt

Oval Sheet

Answer

**13.68**

**Problem:**

Calculate  $4 \cdot 0.307$ .

# Scavenger Hunt

▴ Trapezoid Sheet

Answer

**1.228**

## Problem:

Determine the value of  $0.0019 \cdot 7.2$ .

# Scavenger Hunt



Answer

**0.01368**

**Problem:**

Calculate  $4.1 \cdot 2.8$ .

# Scavenger Hunt

 Pentagon Sheet


Answer

**11.48**

## Problem:

Determine the value of  $30.7 \cdot 0.4$ .

# Finding Expressions

 **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each pair of students one set.

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## Card A

$$62 \div 5$$

## Card B

$$41 \div 4$$

## Card C

$$1 \div 25$$

## Card D

$$12.6 \div 0.08$$

## Card E

$$5.125 \div 0.05$$

## Card F

$$3.7 \div 0.4$$

## Card G

$$9 \div 1.2$$

## Card H

$$18.6 \div 1.5$$

## Card I

$$7 \div 8$$

## Card J

$$53.825 \div 5$$

## Card K



$$77.4 \div 5$$

## Card L

$$7.353 \div 0.3$$


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Do Hybrid Cars Save Money?

	DesWagon	DesMobile
		
<b>Engine Type</b>	Gas	Hybrid
<b>Price</b>	\$28,100	\$32,650
<b>Top Speed</b>	130 miles per hour	112 miles per hour
<b>Safety Rating</b>	5 out of 5	4 out of 5
<b>Gas Tank Capacity</b>	16.8 gallons	11.5 gallons
<b>Range*</b>	490 miles	575 miles

\*A vehicle's range is how far it can travel on a full tank of gas.

# Card Sort: Percents, Decimals, and Fractions

 **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each pair of students one set.

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**Card 1**

1.25

**Card 2**

0.04

**Card 3**

$\frac{1}{400}$

**Card 4**

$\frac{5}{4}$

**Card 5**

0.125

**Card 6**

125%

**Card 7**

$\frac{1}{4}$

**Card 8**

0.25

**Card 9**

0.0025

**Card 10**

12.5%

**Card 11**

4%

**Card 12**

25%

**Card 13**

$\frac{1}{25}$

**Card 14**

$\frac{1}{8}$

**Card 15**

0.25%

Name: ..... Date: ..... Period: .....

# Grocery Prices

## Groceryland

Sugar (5 lb)	\$3.26
Flour (5 lb)	\$4.50
Apples (3 lb)	\$3.60
Eggs (2 dozen)	\$8.60
Butter (32 oz)	\$9.06
Milk (1 gal)	\$3.98
<b>Total</b>	<b>\$33.00</b>

## Groceries Plus

Sugar (5 lb)	\$3.20
Flour (5 lb)	\$4.25
Apples (3 lb)	\$3.69
Eggs (2 dozen)	\$4.98
Butter (32 oz)	\$8.98
Milk (1 gal)	\$4.14
<b>Total</b>	<b>\$29.24</b>

## Groceries Galore

Sugar (5 lb)	\$4.30
Flour (5 lb)	\$4.10
Apples (3 lb)	\$4.10
Eggs (2 dozen)	\$8.90
Butter (32 oz)	\$9.00
Milk (1 gal)	\$3.92
<b>Total</b>	<b>\$34.32</b>

## Grocery Palace

Sugar (5 lb)	\$4.49
Flour (5 lb)	\$4.99
Apples (3 lb)	\$3.94
Eggs (2 dozen)	\$9.05
Butter (32 oz)	\$9.10
Milk (1 gal)	\$4.05
<b>Total</b>	<b>\$35.62</b>



Unit 6

**Activity Sheets  
and Cards**



Name: ..... Date: ..... Period: .....

# Challenge Creator

- Choose one animal from the pictures or make up your own.
- Create a balanced seesaw. Draw copies of your animal on the left side of the seesaw. If you want to, add extra weight on the left side with your animal. Then fill in the weight on the right side.
- Write an equation that represents your balanced seesaw.
- Do not determine the weight of the animal on this page. You and your classmates will determine the weight of each other's animals in your Student Edition.



Weight



Cat



Dog



Squirrel



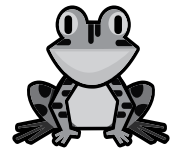
Fox



Raccoon

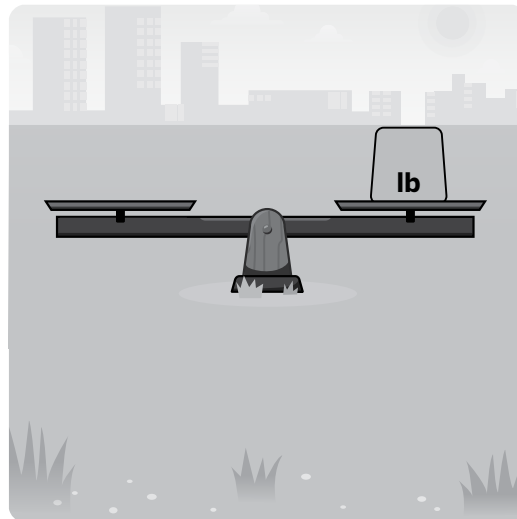


Alligator




Frog

My seesaw:



My equation: .....

# Which Equation?

 **Directions:** Make one copy per two pairs of students. Then pre-cut the cards and give each pair of students one set of Cards 1–6.

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## Card 1

Kwasi rides the bus for a total of 24 stops. After 8 stops, there are  $x$  stops left.

## Card 2

24 is 8 more than  $x$ .

## Card 3

Mohamed made  $\$x$  from mowing lawns. He spent  $\$8$  on a new video game and has  $\$24$  left.

## Card 4

The product of 8 and  $x$  is 24.

## Card 5

8 less than  $x$  is 24.

## Card 6

Ren has  $\$24$  to spend on day passes to ride the subway. Each day pass costs  $\$8$ , and Ren can buy  $x$  of them.

## Card 1

Kwasi rides the bus for a total of 24 stops. After 8 stops, there are  $x$  stops left.

## Card 2

24 is 8 more than  $x$ .

## Card 3

Mohamed made  $\$x$  from mowing lawns. He spent  $\$8$  on a new video game and has  $\$24$  left.

## Card 4

The product of 8 and  $x$  is 24.

## Card 5

8 less than  $x$  is 24.

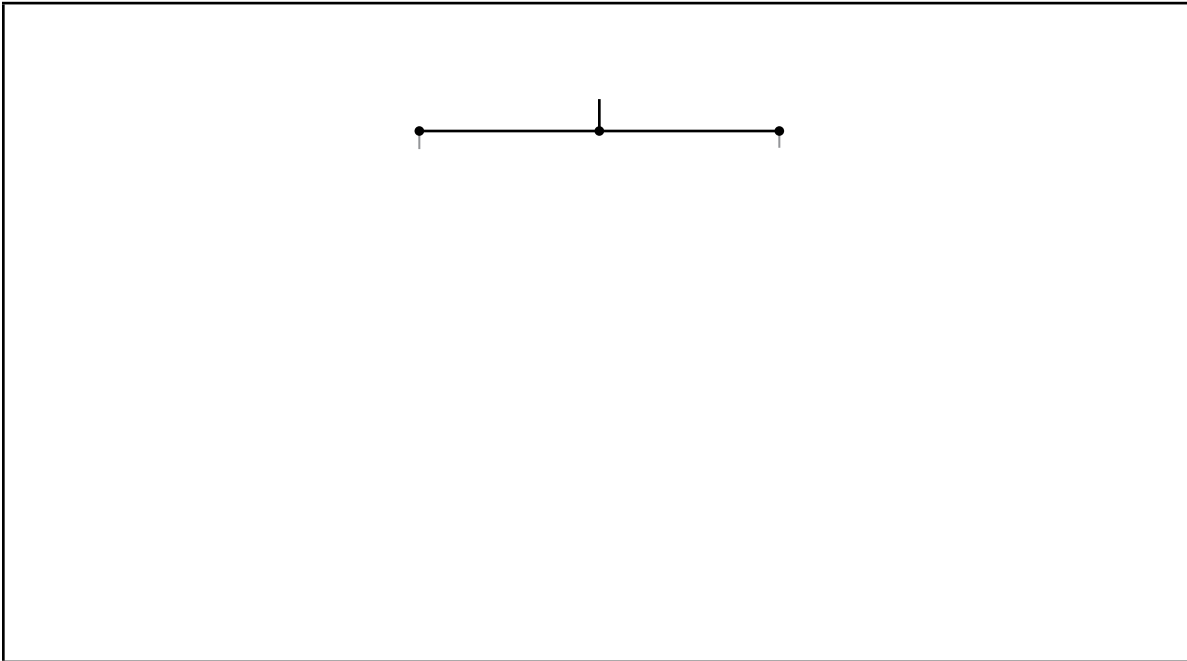
## Card 6

Ren has  $\$24$  to spend on day passes to ride the subway. Each day pass costs  $\$8$ , and Ren can buy  $x$  of them.

Name: ..... Date: ..... Period: .....

# Challenge Creator

Create a balanced hanger using circles and squares. Write an equation that represents your hanger. Do not determine the solution to the equation on this page.



Equation: .....

Name: ..... Date: ..... Period: .....


# Challenge Creator

- Create your own rectangle. Try to create a rectangle none of your classmates will.
- Write one expression to represent its area.
- Your classmates will write an expression that is equivalent to the one you wrote.

**Rectangle:**

**Expression:** .....

# Card Sort

 **Directions:** Make one copy per two pairs of students. Then pre-cut the cards and give each pair of students one set of Cards A–I.

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## Card A

$$3(x + 6)$$

## Card B

$$3x + 6$$

## Card C

$$3(x + 2)$$

## Card D

$$3x + 2x$$

## Card E

$$3a + 3b$$

## Card F

$$3a + 9$$

## Card G

$$3a + 9b$$

## Card H

$$3(a + 3)$$

## Card I

$$3(a + b)$$

## Card A

$$3(x + 6)$$

## Card B

$$3x + 6$$

## Card C

$$3(x + 2)$$

## Card D

$$3x + 2x$$

## Card E

$$3a + 3b$$

## Card F

$$3a + 9$$

## Card G

$$3a + 9b$$


## Card H

$$3(a + 3)$$

## Card I

$$3(a + b)$$

# What's Missing?

 **Directions:** Make one copy per two pairs of students. Then pre-cut the cards and give each pair of students one set of Cards A–E.

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## Card A

$$5^2 + 3^2$$

## Card B

$$(3 + 5)^2$$

## Card C

$$34$$

## Card D

$$(3 \cdot 5)^2$$

## Card E

$$45$$

## Card A

$$5^2 + 3^2$$

## Card B

$$(3 + 5)^2$$

## Card C

$$34$$

## Card D

$$(3 \cdot 5)^2$$

## Card E

$$45$$

Unit 7

**Activity Sheets  
and Cards**




Name: ..... Date: ..... Period: .....

# World Temperatures

The table lists the average low temperature in January for different cities around the world.

City	Average January Low Temperature (°F)
Miami, Florida, USA	63
Pensacola, Florida, USA	45
New York City, New York, USA	29
Noatak, Alaska, USA	-11
London, England	39
Chennai, India	71
Tokyo, Japan	37
Sydney, Australia	68
Yakutsk, Russia	-43
Beijing, China	18
Cairo, Egypt	51
Oranjestad, Aruba	77
Johannesburg, South Africa	59
Tuktoyaktuk, Canada	-22

# Greater Than?

 **Directions:** Make one copy per 32 students. Then pre-cut the cards and give each student one card.

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**Card A1**

$$\frac{1}{7}$$

**Card E1**

$$-\frac{1}{7}$$

**Card B1**

$$-(-1)$$

**Card F1**

$$-1$$

**Card C1**

$$+9.2$$

**Card G1**

$$-9.2$$

**Card D1**

$$\frac{2}{5}$$

**Card H1**

$$-0.4$$

# Greater Than?

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**Card I1**

$$-\left(-\frac{6}{7}\right)$$

**Card M1**

$$-\frac{6}{7}$$

**Card J1**

9.02

**Card N1**

-9.02

**Card K1**

+5

**Card O1**

-5

**Card L1**

+1.25

**Card P1**

$$-\frac{5}{4}$$

# Greater Than?

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**Card Q1**

$$2\frac{2}{3}$$

**Card U1**

$$-\frac{8}{3}$$

**Card R1**

$$+2$$

**Card V1**

$$-2$$

**Card S1**

$$+1.5$$

**Card W1**

$$-1\frac{1}{2}$$

**Card T1**

$$2.5$$

**Card X1**

$$-2\frac{1}{2}$$

# Greater Than?

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**Card Y1**

+2.01

**Card C2**

-2.01

**Card Z1**

+3

**Card D2**

-3

**Card A2**

$\frac{1}{3}$

**Card E2**

$-\frac{1}{3}$


**Card B2**

2.10

**Card F2**

-2.10

# We've Got Game(s)

 **Directions:** Make one copy per group of students. Then pre-cut the cards and give each group one set.

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## Clue A

The account balance was lower in August than in July.

## Clue B

The account balance was higher in September than in August, but the company was still in debt.

## Clue C

The account balance in October was the opposite of the balance in September.

## Clue D

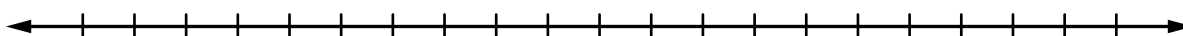
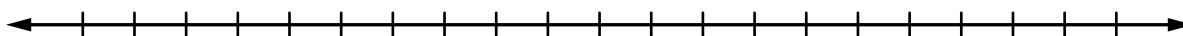
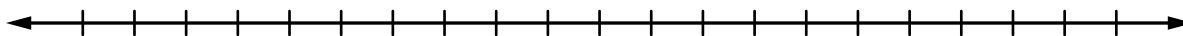
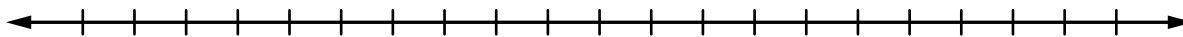
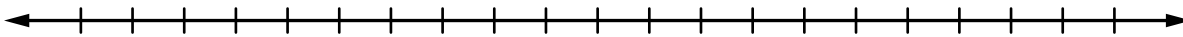
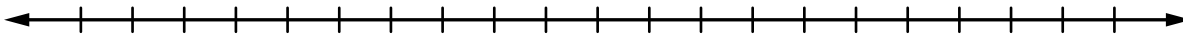
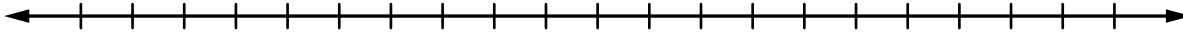
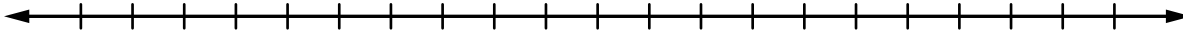
The account balance in November was neither positive nor negative.

## Clue E

The account balance in December was twice as far from 0 as it was in July.

# Horizontal Number Lines

Use the horizontal number lines to help with your thinking. Label your diagram.



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## You're invited to explore more

5 minutes ago, these turtles were at the same position.

What could their walking rates be?

Determine several possible pairs of rates.

Pair 1:

Turtle	Position (ft)	Rate (ft/min)
Top	0	
Bottom	30	

Pair 2:

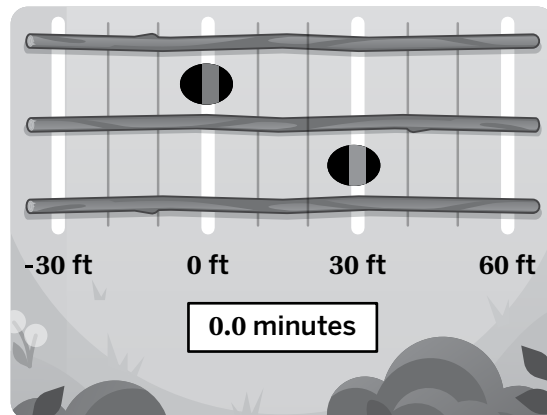
Turtle	Position (ft)	Rate (ft/min)
Top	0	
Bottom	30	

Pair 3:


Turtle	Position (ft)	Rate (ft/min)
Top	0	
Bottom	30	

Pair 4:

Turtle	Position (ft)	Rate (ft/min)
Top	0	
Bottom	30	



# More Numerical Expressions

 **Directions:** Make one copy per group. Pre-cut the cards and give each group one set.

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## Card 1

**14**

Problem:

$$|-8|\left(\frac{1}{4} \times 8\right) \times 3 + 1$$

## Card 2

**131**

Problem:

$$(13 - |2|) + 2 \div 0.4$$

## Card 3

**0**

Problem:

$$-6 + \left(-\frac{1}{4} \times (-48)\right)^2 - |-7|$$

## Card 4

**10**

Problem:

$$8(-0.2 + 4.35 \div 3) + 8 \times 4^2$$

# More Numerical Expressions

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## Card 5

**49**

Problem:

$$20 \div (3 + |2|) - 1 \times 4$$

## Card 6

**4**

Problem:

$$2|-5| + 4^2 - 20 + 8$$

## Card 7

**16**

Problem:

$$(21 \div |-3|) - 6 + 3^2$$


## Card 8

**138**

Problem:

$$21 - 5 \times 2^2 + |6 - 9|$$

# Find That Sand Dollar!

 **Directions:** Make one copy per pair. Then pre-cut the cards and give each student one support card to reference during the activity.

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You will use support cards for this activity.

- In Round 1, Partner A will try to locate the coordinates of the sand dollars, and Partner B will use a support card to give feedback.
- Then you will switch roles in Round 2.
- Which partner are you? Circle one.      Partner A      Partner B


Finding the Sand Dollar Instructions	Support Card Instructions
<ul style="list-style-type: none"> <li>• Choose a point on the coordinate plane where you think the sand dollar may be.</li> <li>• Record your guess on the graph.</li> <li>• Share your guess with your partner.</li> <li>• Use the feedback from your partner to guess a new point. Consider drawing an arrow to show the feedback.</li> <li>• Repeat until you have located the three sand dollars, then trade roles.</li> </ul>	<ul style="list-style-type: none"> <li>• Determine the location of each sand dollar. Keep it a secret!</li> <li>• When your partner shares a guess, find your partner's point on the coordinate plane.</li> <li>• Share feedback about where your partner's guess is compared to where the sand dollar is.</li> <li>• Repeat until your partner has located the three sand dollars, then trade roles.</li> </ul>

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- In Round 1, Partner A will try to locate the coordinates of the sand dollars, and Partner B will use a support card to give feedback.
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- Which partner are you? Circle one.      Partner A      Partner B

Finding the Sand Dollar Instructions	Support Card Instructions
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# Find That Sand Dollar!

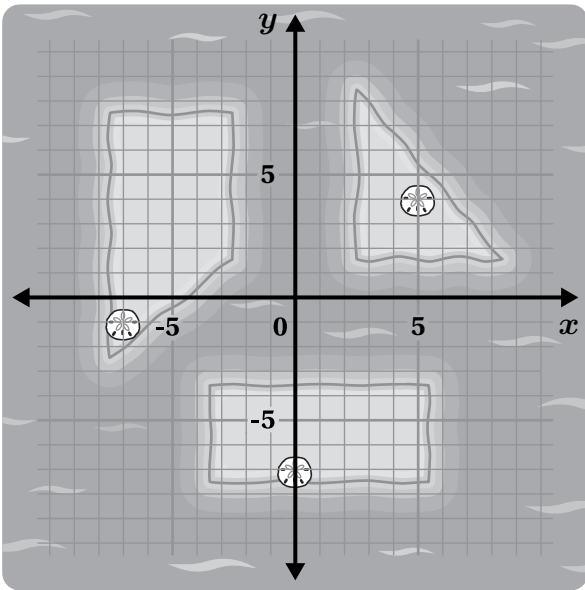
 **Directions:** Make one copy per pair. Then pre-cut the cards and give each pair of students one set, one card at a time. Distribute the cards when students are working on the screen labeled at the top of the card.

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## Problem 7: Partner B (Round 1)

**Reminder:** Don't show this card to your partner!

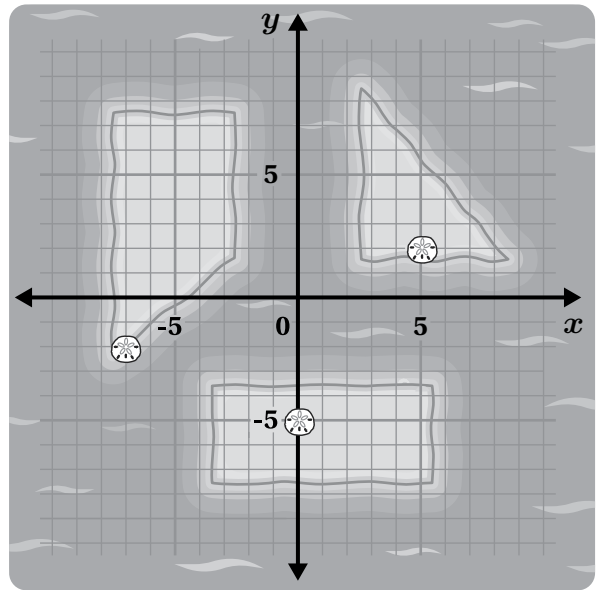
**Sand dollar coordinates:**  $(-7, -1)$ ,  $(5, 4)$ ,  $(0, -7)$



## Problem 7: Partner A (Round 2)

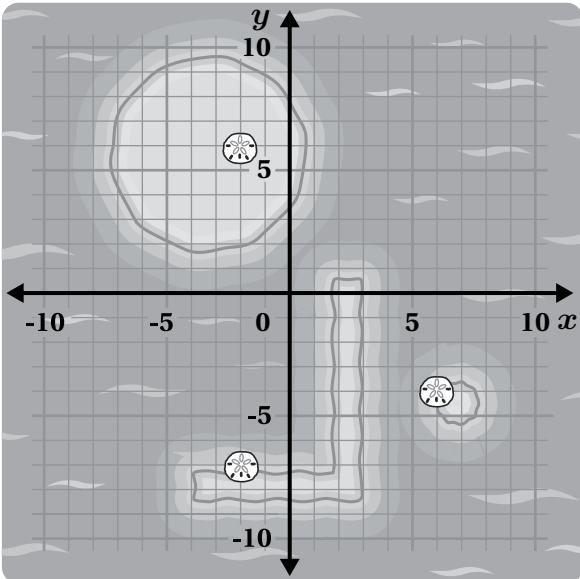
**Reminder:** Don't show this card to your partner!

**Sand dollar coordinates:**  $(-7, -2)$ ,  $(5, 2)$ ,  $(0, -5)$



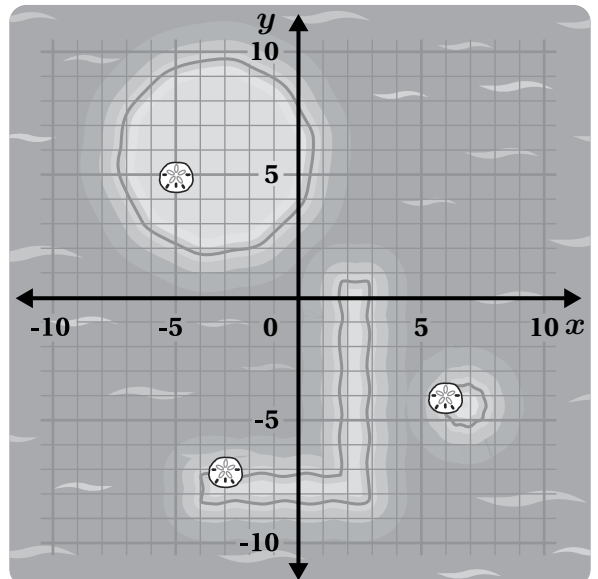
## Problem 8: Partner B (Round 1)

**Sand dollar coordinates:**  $(6, -4)$ ,  $(-2, -7)$ ,  $(-2, 6)$



## Problem 8: Partner A (Round 2)

**Sand dollar coordinates:**  $(6, -4)$ ,  $(-3, -7)$ ,  $(-5, 5)$



# Graph Telephone



Each person in your group will receive a different story. Follow the instructions in your Student Edition to play Graph Telephone!

**Story A:** Santino is wondering how temperatures are changing where he lives over time, so he measures the temperature every year on his birthday.

Feb 3, 2018

2°C

Feb 3, 2019

-3°C

Feb 3, 2020

-8°C

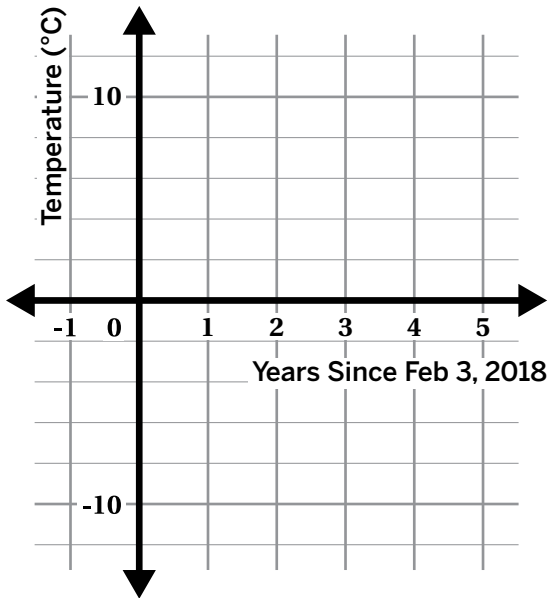
Feb 3, 2021

4°C

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After Round 1: Fold

**Round 1:** Complete the graph.



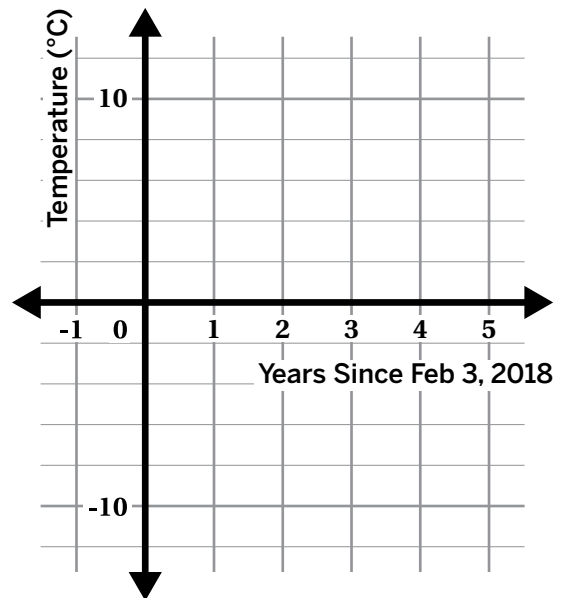
After Round 2: Fold

**Round 2:** Write a story.

After Round 3: Fold

**Round 4:** Write a story.

**Round 3:** Complete the graph.



# Graph Telephone



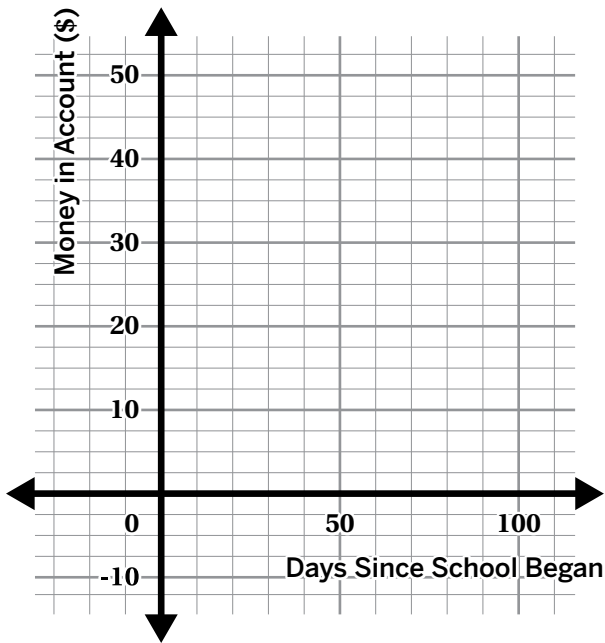
Each person in your group will receive a different story. Follow the instructions in your Student Edition to play Graph Telephone!

**Story B:** Each student at Lucy’s school has an account for lunch money. Everyone starts the year with \$40. After 30 days, Lucy has \$5 left. One month later, she gets a letter saying she owes \$10! Another week later, Lucy’s account is back to \$0.

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After Round 1: *Fold*

**Round 1:** Complete the graph.



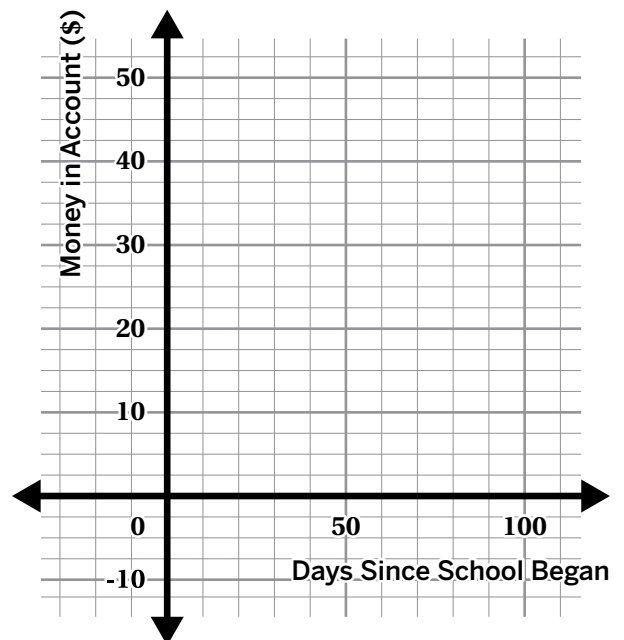
After Round 2: *Fold*

**Round 2:** Write a story.

After Round 3: *Fold*

**Round 4:** Write a story.

**Round 3:** Complete the graph.



# Graph Telephone



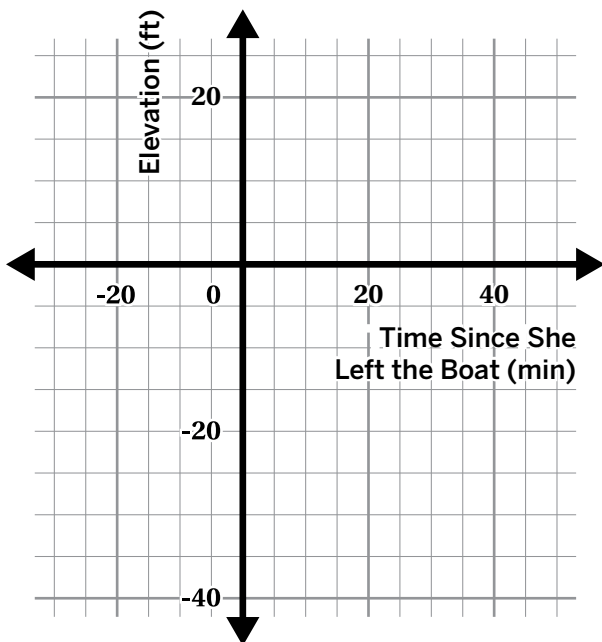
Each person in your group will receive a different story. Follow the instructions in your Student Edition to play Graph Telephone!

**Story C:** A marine biologist visits Monterey Bay, California to go scuba diving. At 10:40 AM, she jump off the boat and land in the water. Her watch tracks her elevation throughout the dive.

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After Round 1: *Fold*

**Round 1:** Complete the graph.



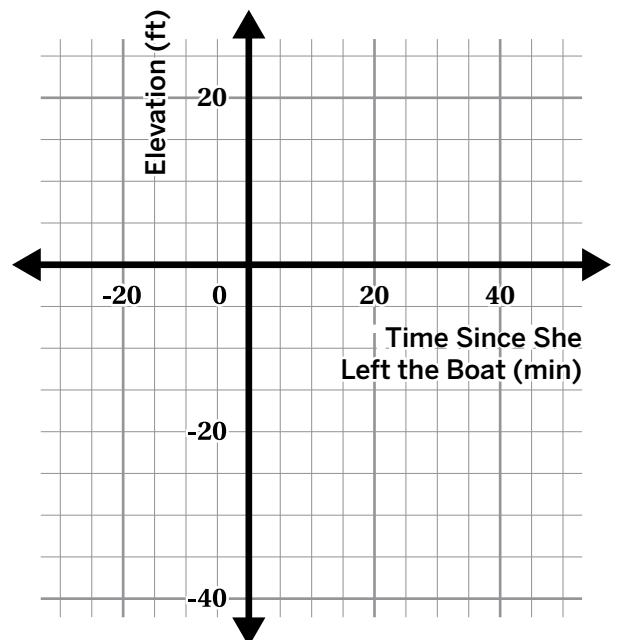
After Round 2: *Fold*

**Round 2:** Write a story.

After Round 3: *Fold*

**Round 4:** Write a story.

**Round 3:** Complete the graph.



# Graph Telephone



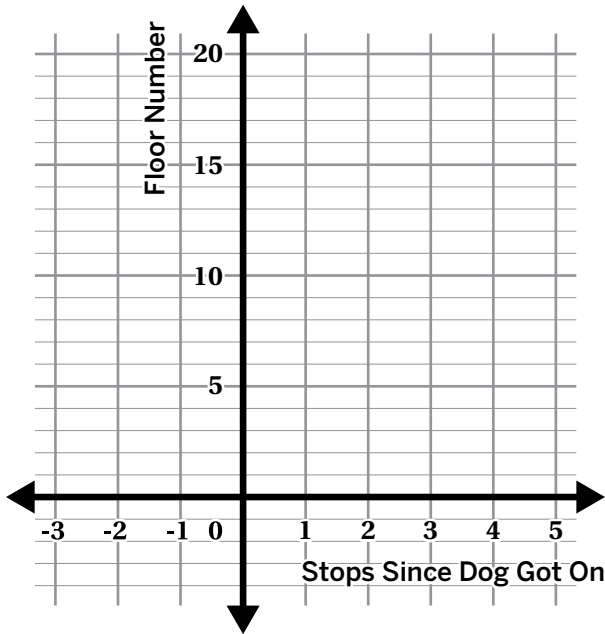
Each person in your group will receive a different story. Follow the instructions in your Student Edition to play Graph Telephone!

**Story D:** I get on a hotel elevator on the 17th floor. At the next stop, two more people get on. On the 10th floor, a dog walks on by itself! The elevator then makes a couple more stops. Everyone gets off on the first floor. The dog follows us.

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After Round 1: *Fold*

**Round 1:** Complete the graph.



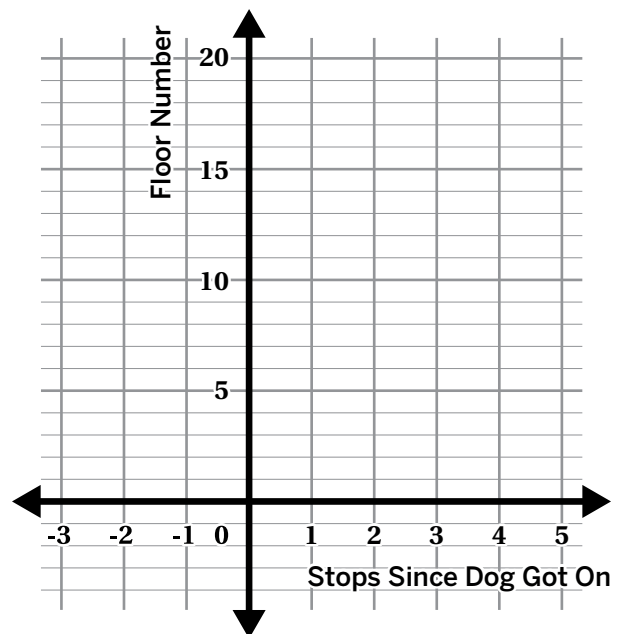
After Round 2: *Fold*

**Round 2:** Write a story.

After Round 3: *Fold*

**Round 4:** Write a story.

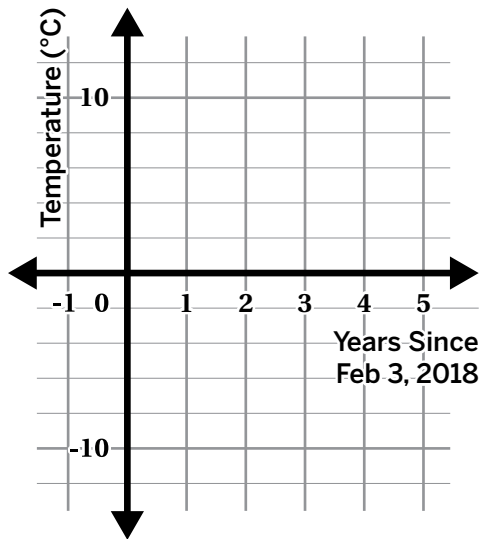
**Round 3:** Complete the graph.



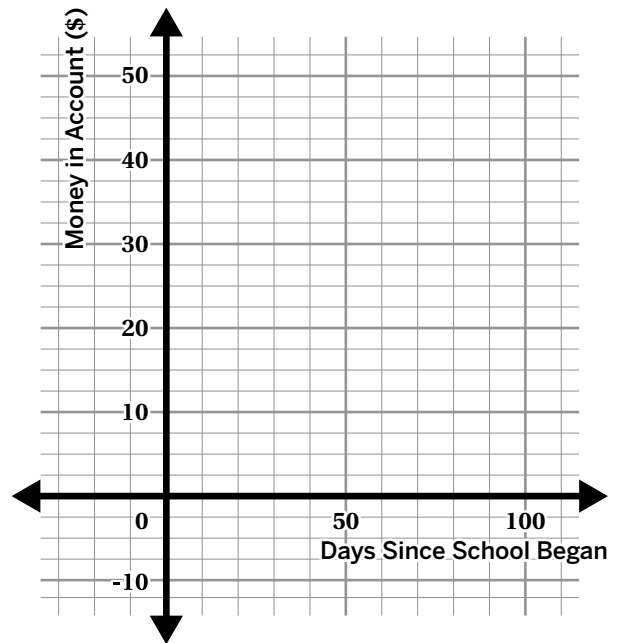
# Graph Telephone (answers)

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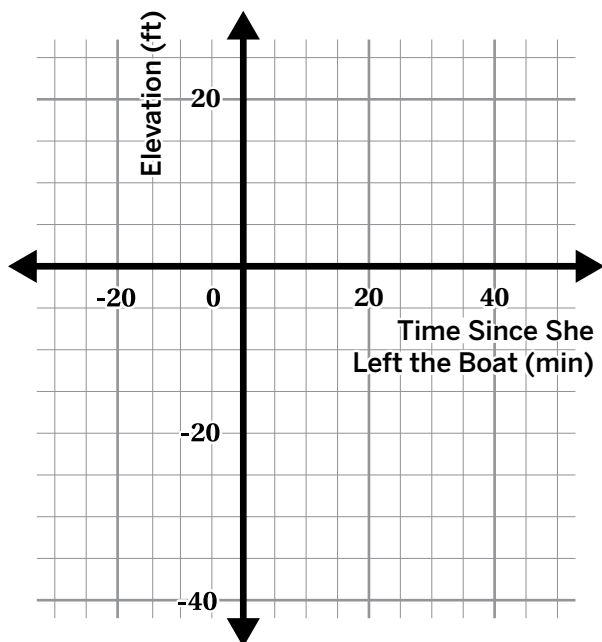
## Story A



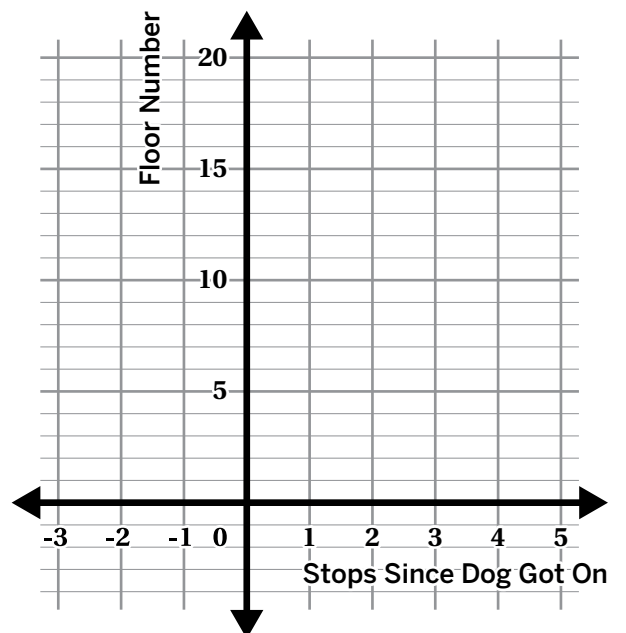
## Story B



## Story C



## Story D






Unit 8

**Activity Sheets  
and Cards**



# Conquer the World

 **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each pair of students one set.

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## Clue A

$$x = 40$$

## Clue B

$$x = -40$$

## Clue C

$$x = 8$$

## Clue D

$$x = -8$$

## Clue E

$$-5x = -40$$

## Clue F

$$-40 = 5x$$

## Clue G

$$-8 = \frac{x}{5}$$

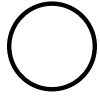
## Clue H

$$\frac{x}{-8} = -5$$

Name: ..... Date: ..... Period: .....

# Challenge Creator

- Choose either Hanger A or Hanger B. Then add up to 5 shapes on each side to create your own hanger challenge.
- Record the inequality that represents your hanger in your Student Edition. Do *not* write the inequality down on this page.



$c$  lb



$h$  lb



$p$  lb



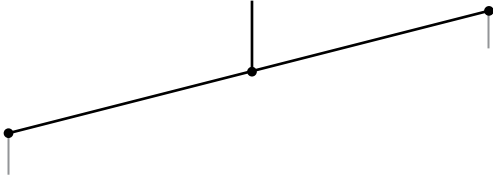
$s$  lb



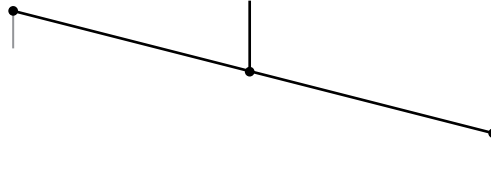
$t$  lb

My hanger diagram:

Hanger A



Hanger B



# Unit 9

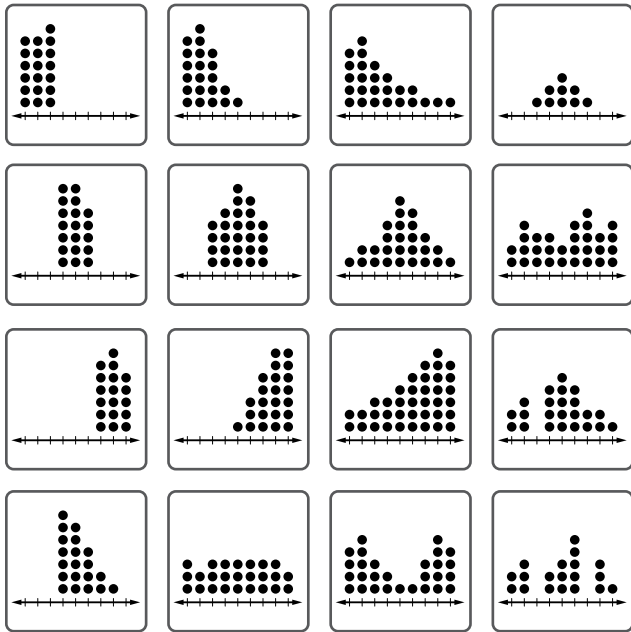
## **Activity Sheets and Cards**



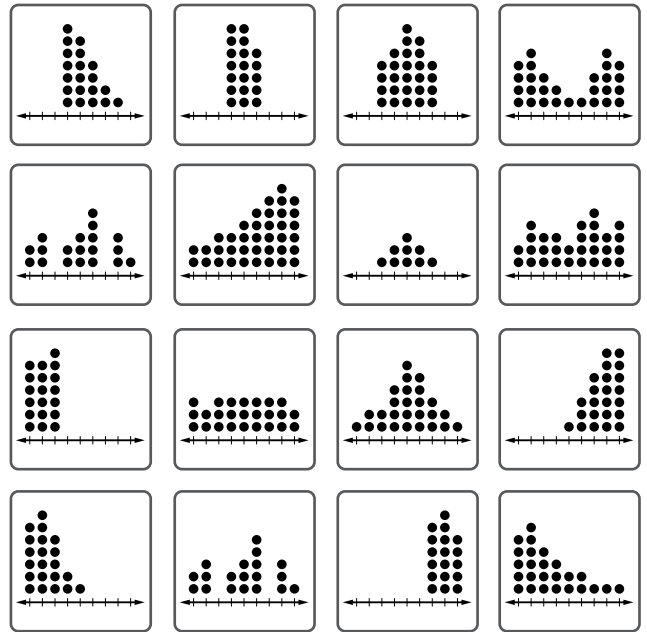
Name: ..... Date: ..... Period: .....

# Polygraph

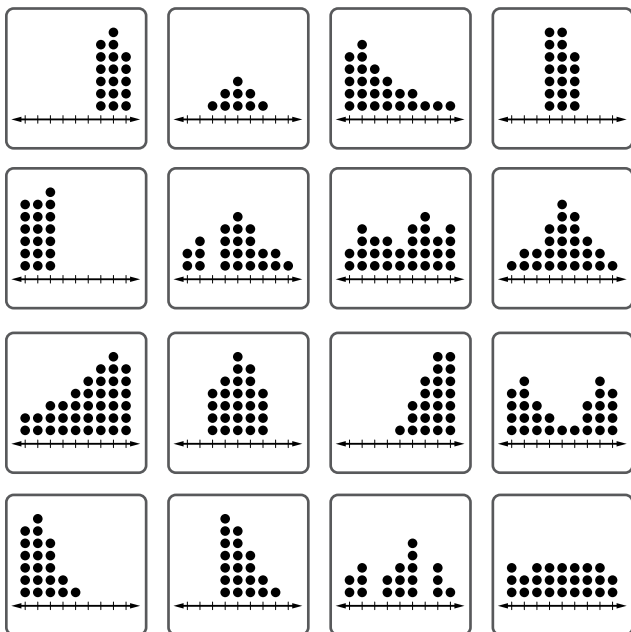
## Round 1



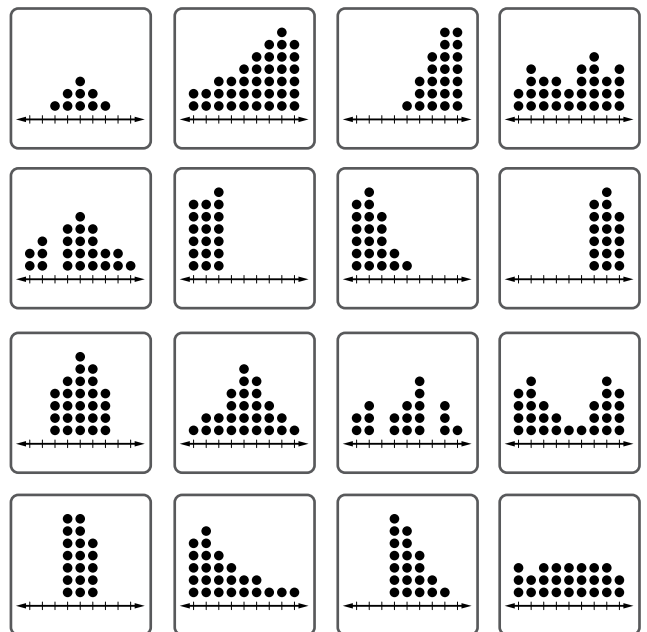
## Round 2



## Round 3



## Round 4



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Comparing Elementary and High School Classrooms

Elementary School Classrooms

Number of Students	Number of Chairs
15	20
16	20
17	20
16	22
15	18
20	21
16	22
20	25
18	19
15	16
18	22
16	20

Source: National Low Income Housing Coalition

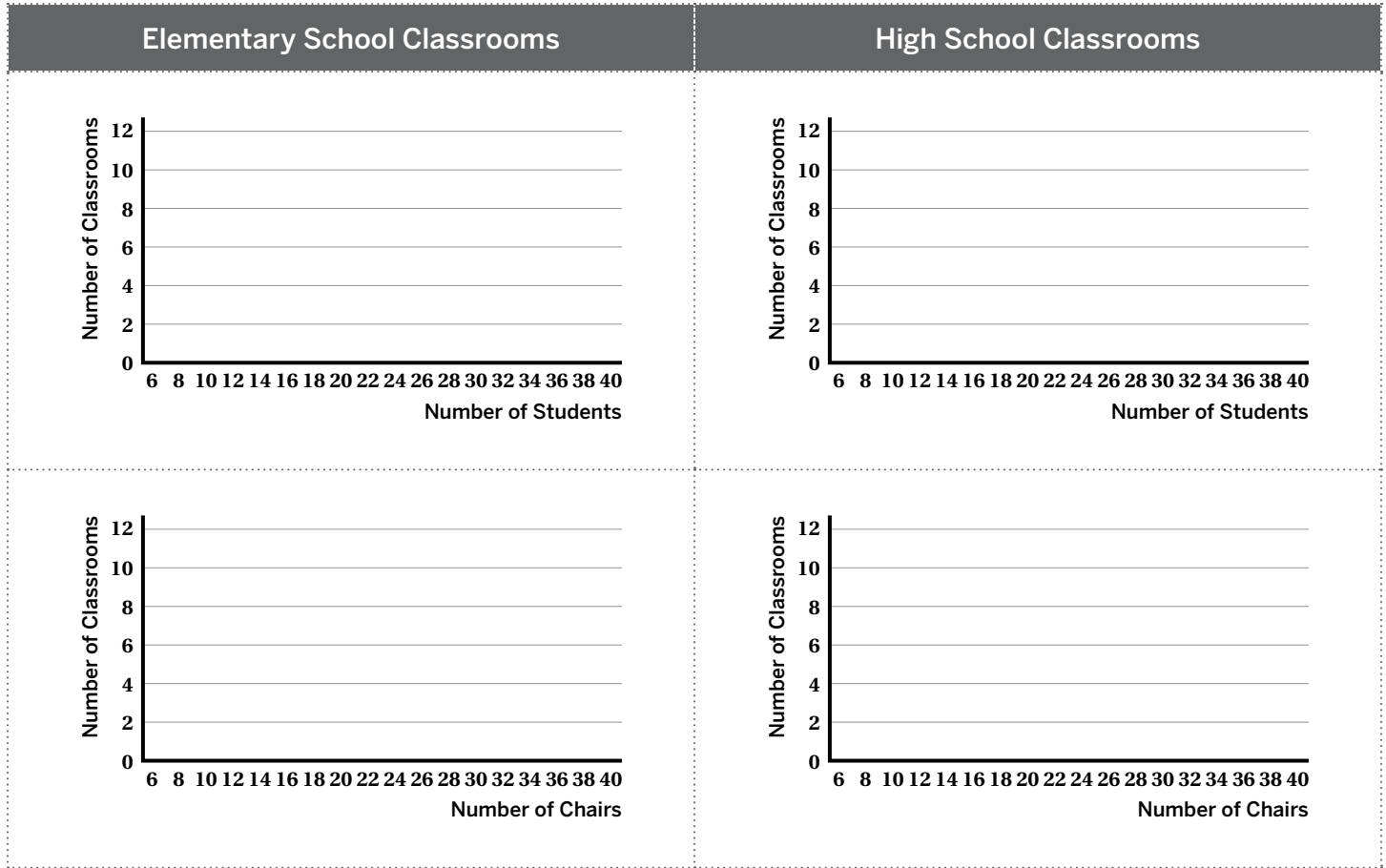
High School Classrooms

Number of Students	Number of Chairs
8	12
30	36
27	30
12	15
25	26
27	32
28	30
22	25
25	27
12	15
12	16
14	15
9	12

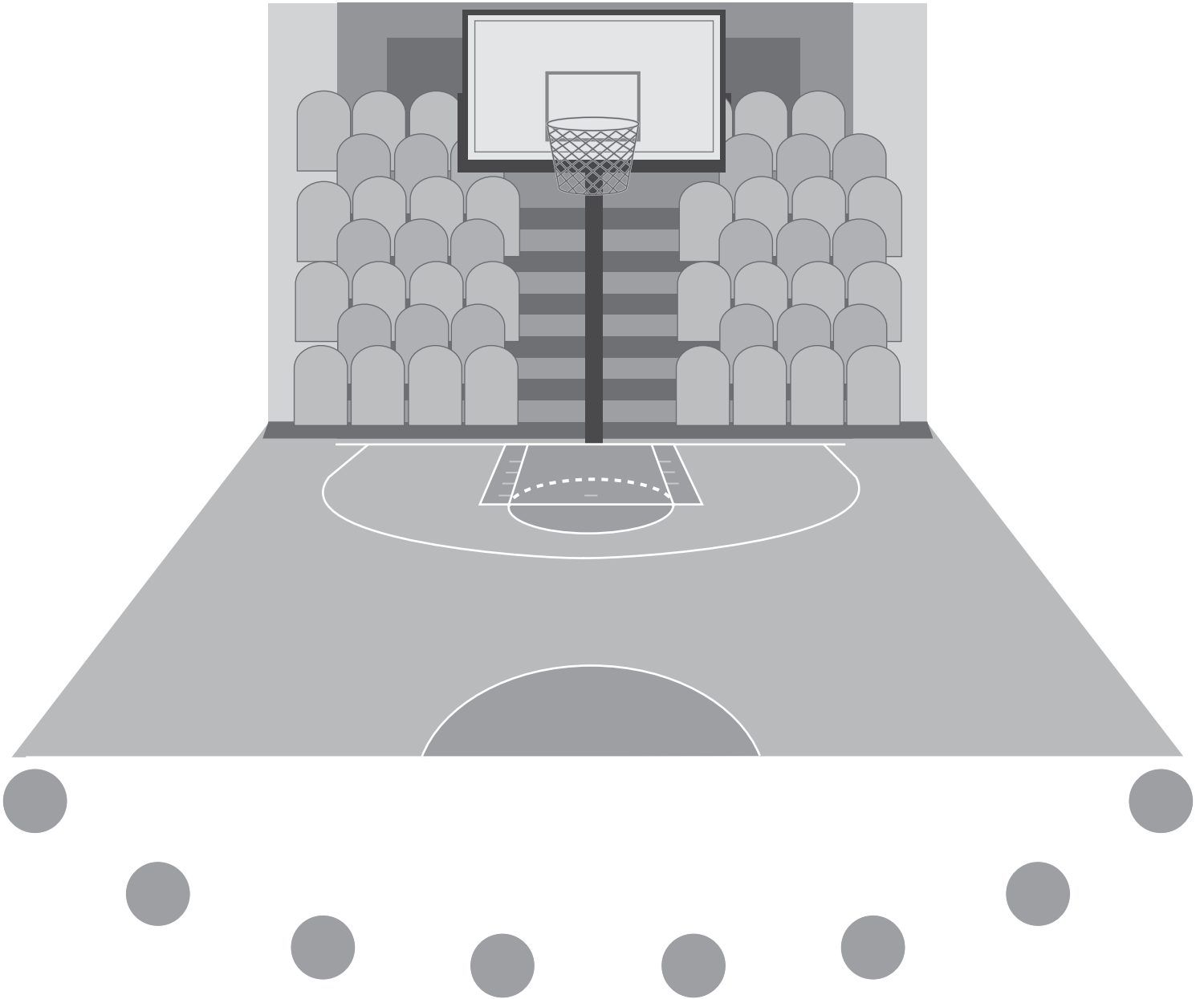
Source: National Low Income Housing Coalition

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Comparing Elementary and High School Classrooms (answers)



# Warm-Up

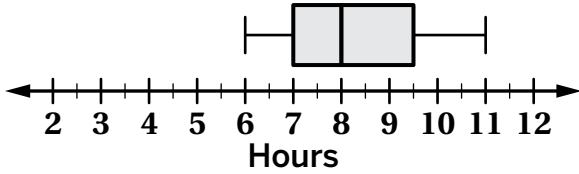


# Bus or Train?

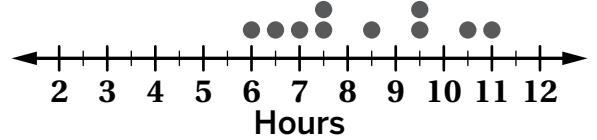
✂️ **Directions:** Make one copy per pair of students. Then pre-cut the cards and give each student one set.

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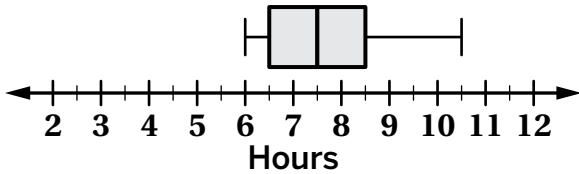
**Card A**



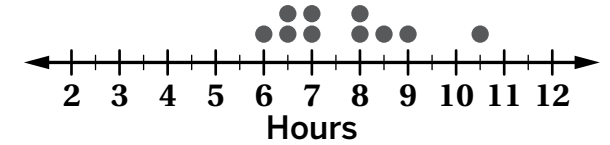
**Card B**



**Card C**



**Card D**



**Card E**

4.5 hours

**Card F**

5 hours

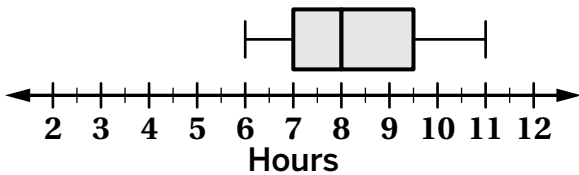
**Card G**

7.5 hours

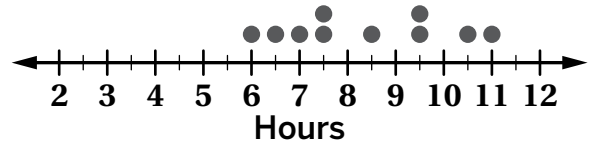
**Card H**

2.5 hours

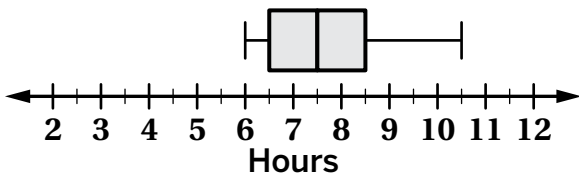
**Card A**



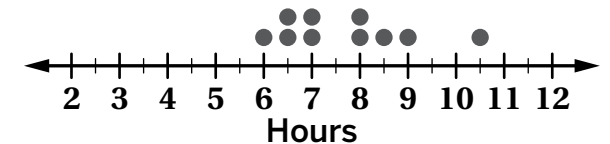
**Card B**



**Card C**



**Card D**



**Card E**

4.5 hours

**Card F**

5 hours

**Card G**

7.5 hours

**Card H**


2.5 hours



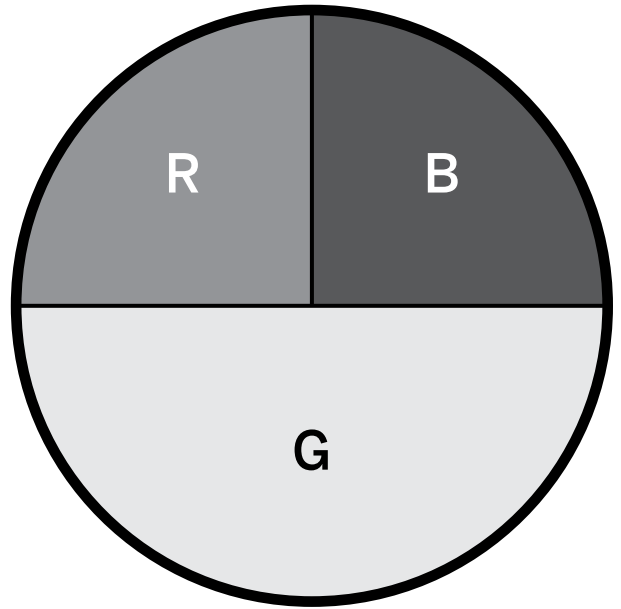
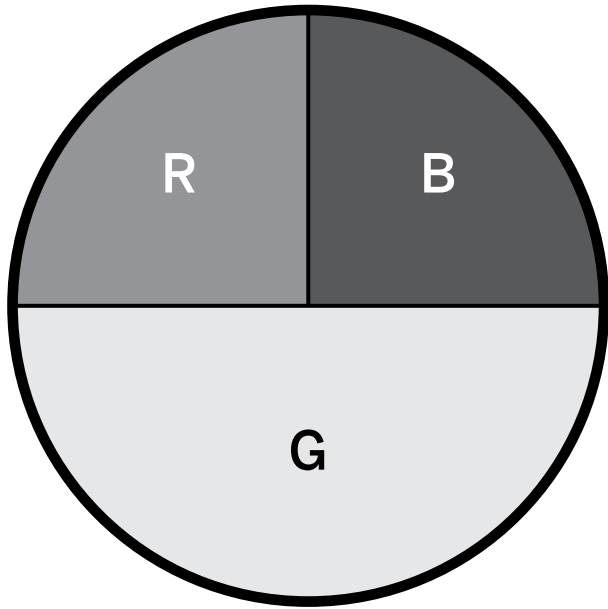
Unit 10  
**Activity Sheets  
and Cards**



# Experiment Stations

 **Directions:** Make one copy per two groups of students. This page contains pieces for two Spinner stations and two Random Letters stations. Pre-cut the spinners. Cut out and fold each letter in TENNESSEE and place them in a bowl or bag for students to draw at random.

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T

E

N

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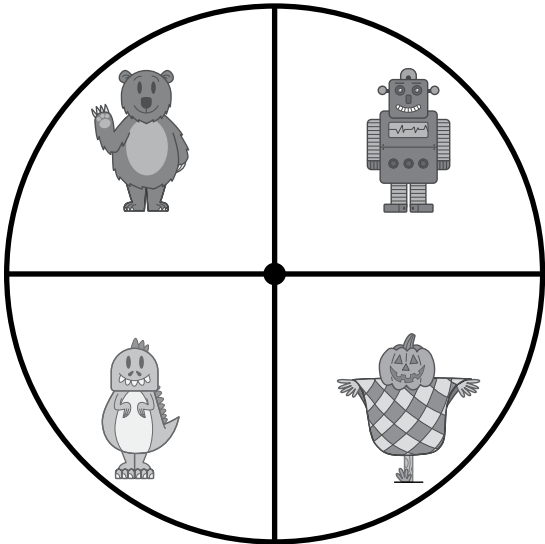
E

E

Name: ..... Date: ..... Period: .....

# Probability and Sample Spaces

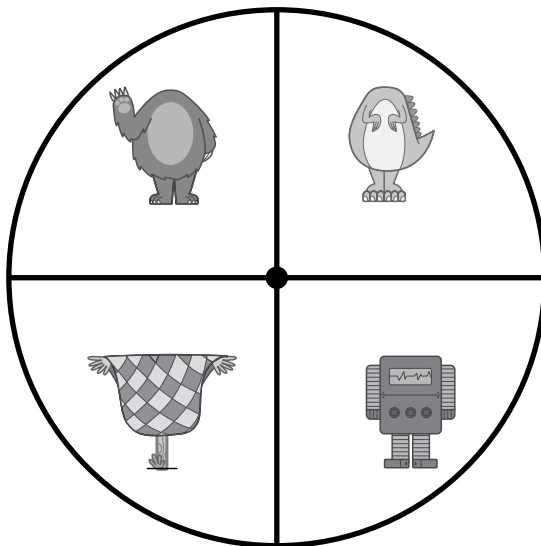
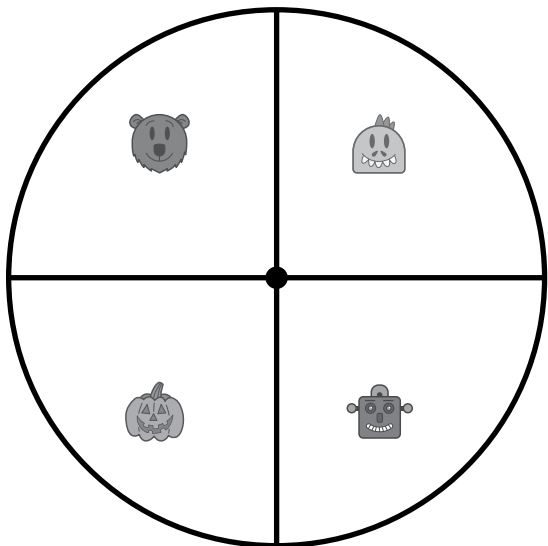
Unfold one end of a paper clip to use as the pointer. Use a pencil to hold the rounded (closed) end of the paper clip in the center of the spinner. Spin the paper clip around the pencil.



Name: ..... Date: ..... Period: .....

# Prob-bear-ly Mismatched

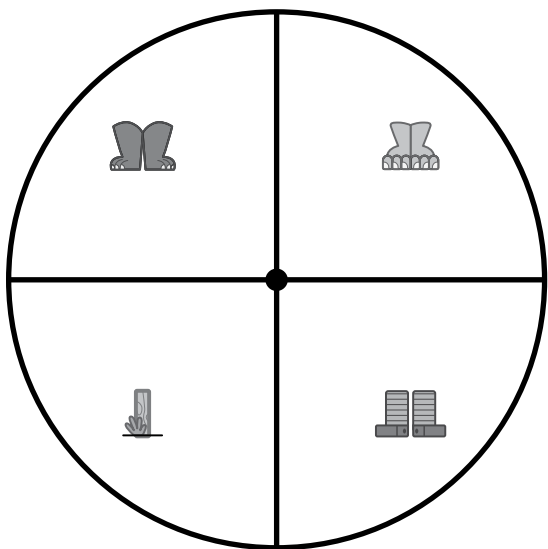
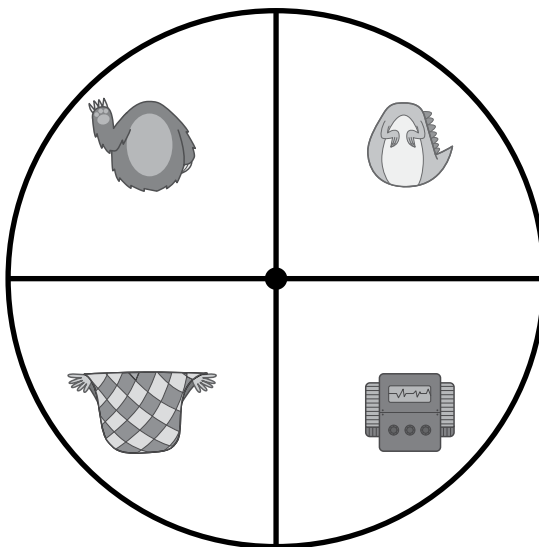
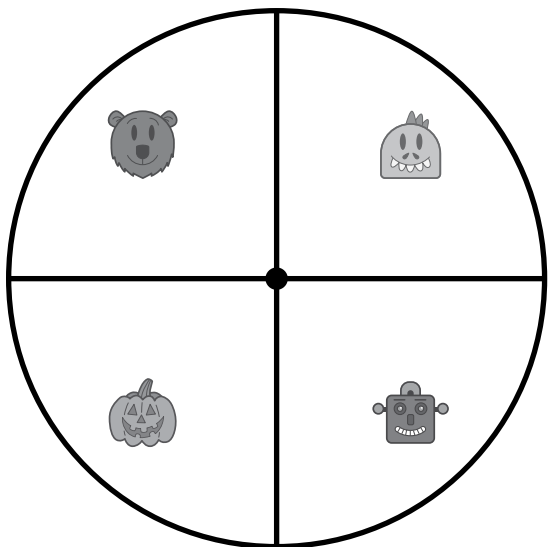
Unfold one end of a paper clip to use as the pointer. Use a pencil to hold the rounded (closed) end of the paper clip in the center of the spinner. Spin the paper clip around the pencil. Spin both spinners to complete one spin.



Name: ..... Date: ..... Period: .....

# Explore More

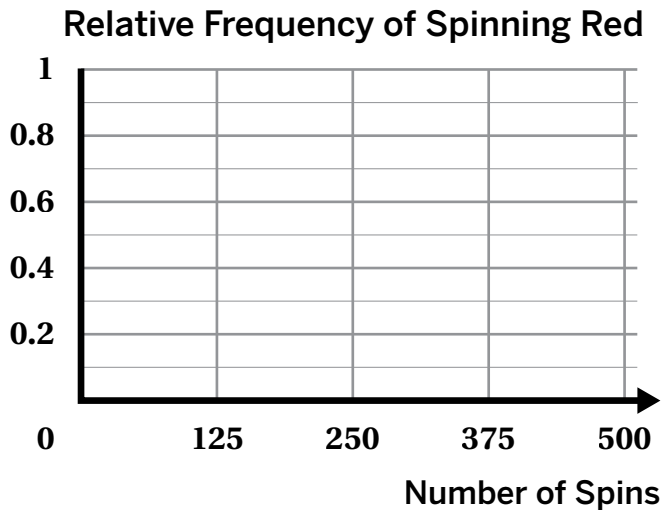
Unfold one end of a paper clip to use as the pointer. Use a pencil to hold the rounded (closed) end of the paper clip in the center of the spinner. Spin the paper clip around the pencil. Spin all three spinners to complete one spin.



Name: ..... Date: ..... Period: .....

# Challenge Creator

Sketch a graph like the ones in Activity 2 based on the probability of spinning red (R) on your spinner. Include a dashed line that shows the probability.







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