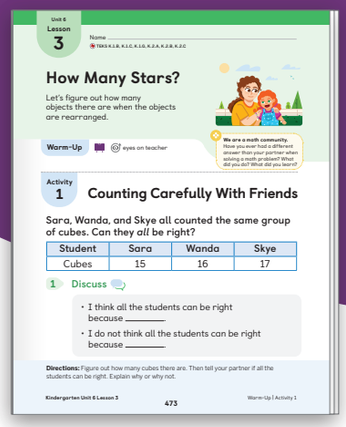
Unit 6
Lesson
3

Student Edition pages, Manipulatives, and Presentation Screens support learning in this lesson.



How Many Stars?

Keeping Track of Rearranged Objects

Let's figure out how many objects there are when the objects are rearranged.

Key Concepts

Today's Goals

1. **Goal:** Determine the quantities of groups of 11–20 objects.
2. **Language Goal:** Justify why the arrangement of objects and the order in which they are counted does not change the quantity of a group. **(Listening and Speaking)** ELPS 1.E, 2.E, 2.F

Connections and Coherence

Students build on their understanding of conservation of number as they use and discuss a variety of strategies to count groups of 11–20 objects. They first consider a scenario in which 3 students determine different quantities for the same group of objects. As they reason, students compare strategies for keeping track when counting and discuss the importance of one-to-one correspondence in accurately determining a quantity. They conclude that counting the same group more than once should yield the same result each time. Students apply this understanding as they count the same group as a partner to notice the total number of objects remains the same after each count. **(TEKS K.1.C, K.1.G)**

Prior Learning

In Lesson 2, students determined the quantities of groups of 11–20 objects and kept track of objects as they counted.

Future Learning

In Lesson 4, students will determine the quantities of groups of 11–20 by applying their learning about conservation of number with rearranged groups of objects.

Integrating Rigor in Student Thinking

- Students **apply** their understanding of conservation of number and develop **procedural skills** for keeping track of objects while counting.

Vocabulary

Review Vocabulary

eleven
twelve
thirteen
fourteen
fifteen
sixteen
seventeen
eighteen
nineteen
twenty
teen number

TEKS

Addressing

K.2.C

Count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order.

Also Addressing: **K.2.A, K.2.B**

Math Process Standards: K.1.B, K.1.C, K.1.G

ELPS: 1.B, 1.C, 1.E, 1.F, 2.B, 2.C, 2.D, 2.E, 2.F, 3.C, 3.F

Building Toward

1.2.A

Building Math Identity

We are a math community.
Have you ever had a different answer than your partner when solving a math problem? What did you do? What did you learn?

Invite students to reflect on this question as they complete this lesson.

Lesson at a Glance 60 min

TEKS: K.1.B, K.1.C, K.1.G, K.2.A, K.2.B, K.2.C

Warm-Up

Whole Class | 10 min

Students use the **Notice and Wonder** routine to share what they notice and wonder about an image of the American flag of 1777.

Activity 1

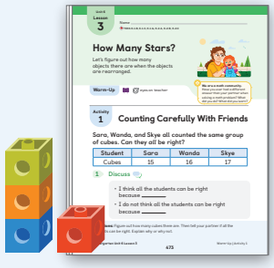
Pairs | 10 min

Students count a group of 16 cubes and consider whether different numbers can represent the same group of cubes. In the Connect, they discuss why the total number of objects can only be represented by 1 number, even when the group is counted in different ways. **(TEKS K.1.C)**

Note: The Student Edition is not required for this activity.

Manipulative Kit: connecting cubes, Work Mats (optional)

Additional Prep Assemble: bags of 16 cubes, one per pair



Activity 2

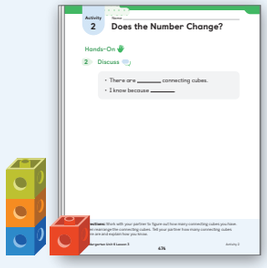
Pairs | 15 min

Students count groups of 11–20 objects, rearrange them, and then determine how many there are again. In the Connect students discuss how the number of objects in a group stays the same, regardless of how the objects are arranged. **(TEKS K.1.B, K.1.C)**

Note: The Student Edition is not required for this activity.

Manipulative Kit: connecting cubes, Work Mats (optional)

Additional Prep Assemble: bags of 11–20 connecting cubes, one per pair



Synthesis

Whole Class | 10 min

Students review and reflect on the idea of conservation of number. They justify why a quantity remains the same even when the group is rearranged.

Show What You Know (optional)

Independent | 5 min

Students demonstrate their understanding by determining the number of counters in a bag before and after rearranging the counters.

Manipulative Kit: two-color counters, 10-frames

Materials: *Show What You Know PDF*, Work Mats

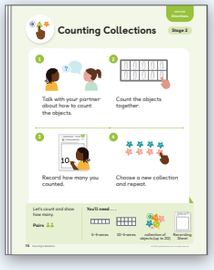
Additional Prep Assemble: bags of 11–20 two-color counters, one per student

Center

Pairs | 15 min

Students are introduced to the Center, *Counting Collections, Up to 20*, in which they figure out how many are in a collection of up to 20 objects, represent the quantity, and represent how they counted.

Additional Prep Assemble: bags of 11-20 objects, one per pair



Math Language Development

Emergent Bilinguals

Consider using the *Math Language Development Resources* with the **Activity 1, Monitor** to support math language acquisition.

- ✓ Cognates
- ✓ Sentence frames
- ✓ Visuals

ELPS 1.E, 2.C, 2.D, 2.E, 2.F

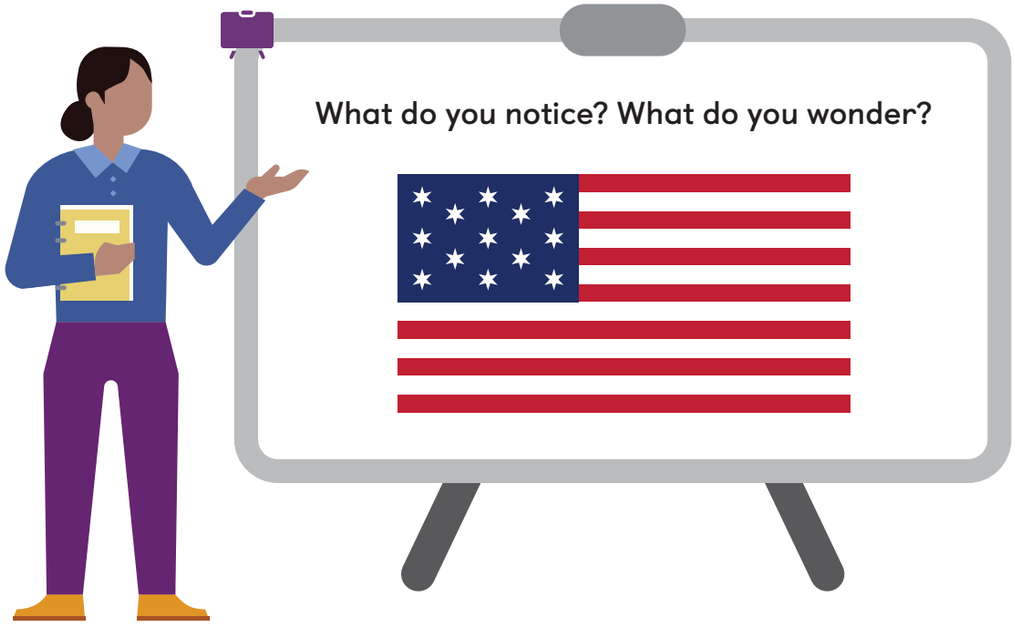
Pre-Production	Beginning	Intermediate	High Intermediate	Advanced
Students **listen** to spoken English and **respond** using their primary languages and gestures.	Students **listen** to spoken English and **speak** using their primary languages, gestures, and single words or short phrases.	Students **listen** to spoken English and **speak** using short phrases or simple sentences.	Students **listen** to spoken English and **speak** using a variety of sentence types.	Students **listen** to spoken English and **speak** using longer sentences. Exemplar responses are provided.

Whole Class | 10 min

Presentation Screen

Warm-Up Notice and Wonder

Purpose: Students examine an image of the United States flag of 1777 to prepare for organizing objects to make the objects more efficient to count.



1 Launch

Display the image.

Use the Notice and Wonder routine.

Use the Think-Pair-Share routine. Ask, "What do you notice? What do you wonder?"

2 Connect

Record students' responses as they share.

Ask:

- "How many stars do you think are on the flag?"
- "What about the group helped you figure out how many stars there are?"

Students might say . . . ELPS 2.B

I notice there are stars on the flag.

I notice the stars are spread out.

I wonder how many stars there are.

I wonder if there are 10 stars or if there are more than 10 stars.

Pairs | 10 min

Activity 1 Counting Carefully With Friends

Purpose: Students consider whether multiple numbers can represent a given group to understand that counting a group of objects should result in the same quantity each time.

Presentation Screens

Materials

Manipulative Kit:

- Put 16 connecting cubes in paper bags **(Classroom materials)**. Distribute one bag of connecting cubes to each pair.
- Provide students with access to 10-frames (optional).
- Display 16 connecting cubes during the Connect.

Centers Resources:

- Provide students with access to Work Mats (optional).

Short on time? Consider counting the pile of connecting cubes as a class rather than having students count them in pairs.

1 Launch

Say, "This is the US flag of 1777. Sara, Wanda, and Skye wondered how they could figure out how many stars there were. Dez had an idea. He placed a pile of connecting cubes in front of them."

Say:

- "Dez said, 'Let's imagine these connecting cubes are the stars. How many are there?'"
- "Sara, Wanda, and Skye each counted the same group of cubes. Sara said there were 15 cubes, Wanda said there were 16 cubes, and Skye said there were 17 cubes."

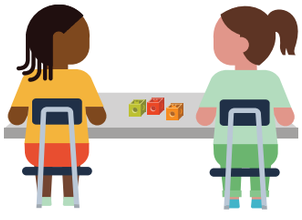
Say:

- "Figure out how many cubes there are. Then tell your partner if all the students can be right. Explain why or why not."
- "You can use tools if they are helpful."

A **Accessibility: Executive functioning** Invite students to plan a strategy, including the tools they will use, to figure out the number of cubes. If time allows, invite students to share their plan with a partner before they begin.

Provide access to 10-frames and Work Mats.

2 Monitor



While students complete the activity, refer to the D **Differentiation | Teacher Moves** table on the following page.

If students need help getting started . . .

- Ask, "How many cubes are there? How do you know?"
- Ask, "What do you need to figure out next?"

3 Connect

Display a pile of 16 connecting cubes.

MLR **MLR7: Compare and Connect** ELPS 1.B, 1.E, 2.B, 2.D, 2.E
Invite 2 students to share different strategies for determining the number of cubes.
Use the Think-Pair-Share routine. Ask:

- "What do you notice about how many cubes each person counted?"
- "Why did each person count a different number of cubes?"
- "What does this make you think about Sara's, Wanda's, and Skye's counting?"
- "Can Sara, Wanda, and Skye all be right? Why or why not?"
- "Do you know what each star represents? How many stars does the US flag have now?"

Key Takeaway: Say, "Every time you count a given group, you should get the same number because you counted each object 1 time."

Student Edition

Unit 6
Lesson 3

Name _____

TEKS K.1.B, K.1.C, K.1.G, K.2.A, K.2.B, K.2.C

How Many Stars?

Let's figure out how many objects there are when the objects are rearranged.

Warm-Up eyes on teacher

We are a math community. Have you ever had a different answer than your partner when solving a math problem? What did you do? What did you learn?

Activity 1

Counting Carefully With Friends

Sara, Wanda, and Skye all counted the same group of cubes. Can they *all* be right?

Student	Sara	Wanda	Skye
Cubes	15	16	17

1 **Discuss** Oral activity: No writing expected.

- I think all the students can be right because _____.
- I do not think all the students can be right because _____.

Directions: Figure out how many cubes there are. Then tell your partner if all the students can be right. Explain why or why not.

Kindergarten Unit 6 Lesson 3 473 Warm-Up | Activity 1

Presentation Screens

D Differentiation | Teacher Moves

Look for students who . . .	For example . . .	Provide support . . .
Almost there Determine that all the students can be right.	***Yes, they can all be right because they all counted the cubes.***	**Support** Ask, "How many cubes are there? What if I counted and said a different number, could I also be right? What does this mean about Sara's and Skye's counting?"
Determine that all the students cannot be right.	***No, they cannot all be right because they counted the same group of cubes. The number of cubes does not change just because they counted differently.***	**Strengthen** Ask, "Why do you think each student counted a different number of cubes?"

Pairs | 15 min

Activity 2 Does the Number Change?

Purpose: Students determine the quantity of objects in a group before and after the objects are rearranged to understand that a quantity remains the same even when it is rearranged.

Presentation Screens

Materials

Manipulative Kit:

- Put 11–20 connecting cubes in paper bags **(Classroom materials)**. Distribute one bag of connecting cubes to each pair.
- Provide students with access to 10-frames (optional).
- Display 11 connecting cubes during the Connect.

Centers Resources:

- Provide students with access to Work Mats (optional).

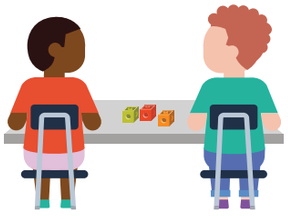
1 Launch

Say:

- "This is another version of the US flag of 1777. Dez wondered, 'Did the number of stars change because they are in different places?'"
- "Work with your partner to figure out how many cubes you have. Then rearrange the cubes. Tell your partner how many there are and explain how you know."

EB **Emergent Bilinguals** Use multimodal examples to clarify what it means to rearrange the objects, including verbal descriptions and gestures or drawings to show the meaning of the word *rearrange*. ELPS 1.B, 2.D, 2.F

2 Monitor



While students complete the activity, refer to the D Differentiation | Teacher Moves table on the following page.

If students need help getting started . . .

- Ask, "How could you arrange the cubes to help you count them?"
- Ask, "What is another way to arrange the cubes?"

MLR **MLR8: Discussion Supports — Sentence Frames** ELPS 1.E, 2.C, 2.E
While students work, read aloud and display this sentence frame for them to use as they explain how they know how many objects there are after the objects are rearranged.

- "There are _____ connecting cubes. I know because _____."

3 Connect

Display a scattered group of 11 connecting cubes.

Ask, "How many cubes are there?"

Play the animation. Pause to display the same group of 11 connecting cubes arranged as a tower of 10 cubes and 1 more loose cube. ELPS 1.F

Ask, "How many cubes are there now? How do you know?"

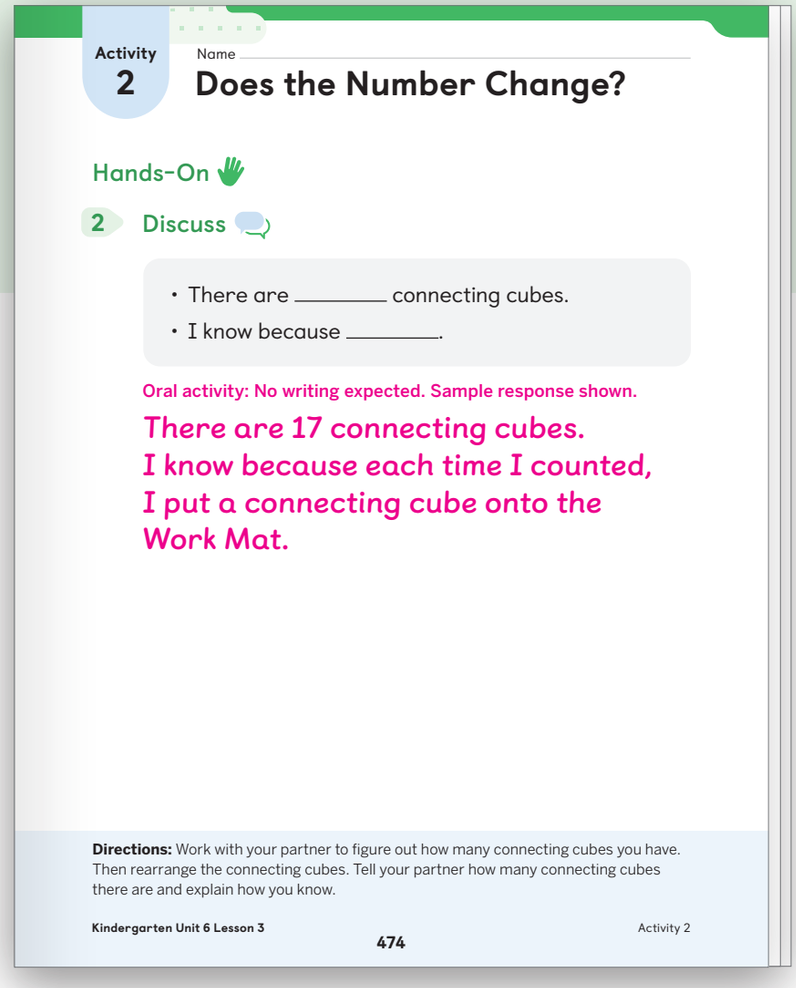
Play the animation to display the same group of 11 connecting cubes arranged on a 10-frame with 1 cube lined up below. ELPS 1.F

Ask, "How many cubes are there now? How do you know?"

Use the Think-Pair-Share routine. Ask, "What did you notice each time the cubes were rearranged? What does this make you think about counting?"

Key Takeaway: Say, "Rearranging objects does not change how many objects there are."

Student Edition



Activity 2

Name _____

Does the Number Change?

Hands-On

2 Discuss

- There are _____ connecting cubes.
- I know because _____.

Oral activity: No writing expected. Sample response shown.

There are 17 connecting cubes. I know because each time I counted, I put a connecting cube onto the Work Mat.

Directions: Work with your partner to figure out how many connecting cubes you have. Then rearrange the connecting cubes. Tell your partner how many connecting cubes there are and explain how you know.

Kindergarten Unit 6 Lesson 3 474 Activity 2

Presentation Screens

D Differentiation | Teacher Moves

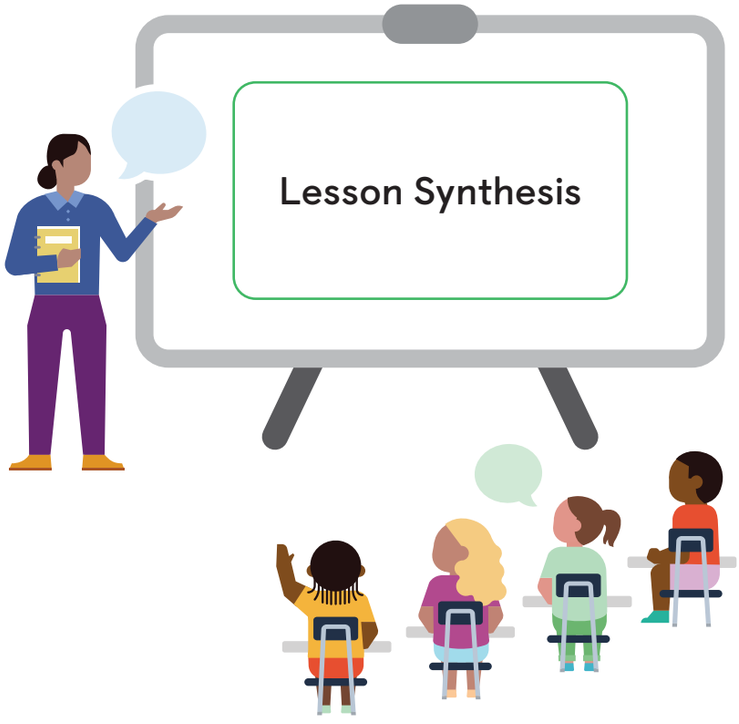
Look for students who . . .	For example . . .	Provide support . . .
Almost there Recount the objects each time they are rearranged and determine a different total.	*First, I counted 12. Then I counted again and got 13 cubes.*	**Support** Ask, "First, you counted the cubes. Then you rearranged them and counted again. Should the number be the same or different? How do you know?"
Recount the objects each time they are rearranged and determine the same total.	*First, I counted 12. After I moved them around, I counted 12 again.*	**Strengthen** Ask, "First, you counted the cubes. Then you rearranged them and counted again. Is there a way to know how many are in this group without having to count again?"
Recognize they do not need to recount the objects after they are rearranged.	*First, I counted 12. After I moved the cubes around, I knew there were still 12 because I did not change the number of cubes.*	**Stretch** Ask, "Will this strategy always work when figuring out how many objects there are? Why or why not?"

Whole Class | 10 min

Synthesis

Presentation Screen

Lesson Takeaway: The quantity of objects in a group stays the same regardless of the arrangement of the objects.



Play the animation. ELPS 1.F

Say, "Priya made a group of 16 connecting cubes, and Diego rearranged the connecting cubes. Diego says his group has more cubes than Priya's group because it has more rows."

Use the Think-Pair-Share routine. Ask, "Does Diego's group have more cubes than Priya's group? Why or why not?"

Ask, "What can you tell Diego about the number of cubes in his group?"

Say, "Rearranging a group of objects does not change how many there are. When you count the objects in a group and then rearrange them, you do not need to count the objects again because the total number of objects stays the same."

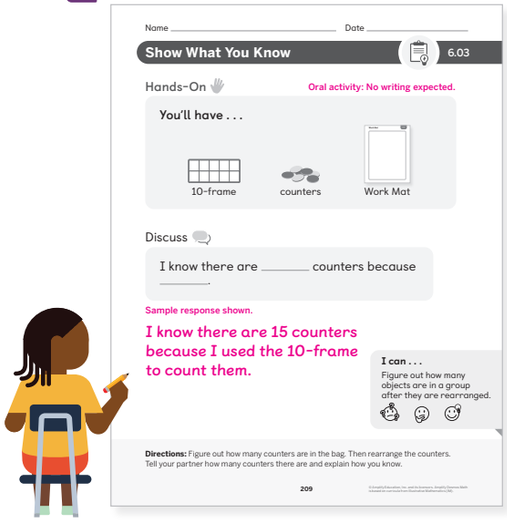
Invite students to refer to the **Summary** during Practice or anytime during the year.

Show What You Know

Independent | 5 min

(Optional)

Show What You Know PDF


Name _____ Date _____

Show What You Know 6.03

Hands-On — Oral activity: No writing expected.

You'll have . . .

10-frame | counters | Work Mat

Discuss

I know there are _____ counters because _____.

Sample response shown.

I know there are 15 counters because I used the 10-frame to count them.

I can . . .
Figure out how many objects are in a group after they are rearranged.

Directions: Figure out how many counters are in the bag. Then rearrange the counters. Tell your partner how many counters there are and explain how you know.

209

Today's Goals

1. **Goal:** Determine the quantities of groups of 11–20 objects.
   - In the *Show What You Know*, students counted objects before and after rearranging the objects.
2. **Language Goal:** Justify why the arrangement of objects and the order in which they are counted does not change the quantity of a group. **(Listening and Speaking)** ELPS 1.E, 2.E, 2.F

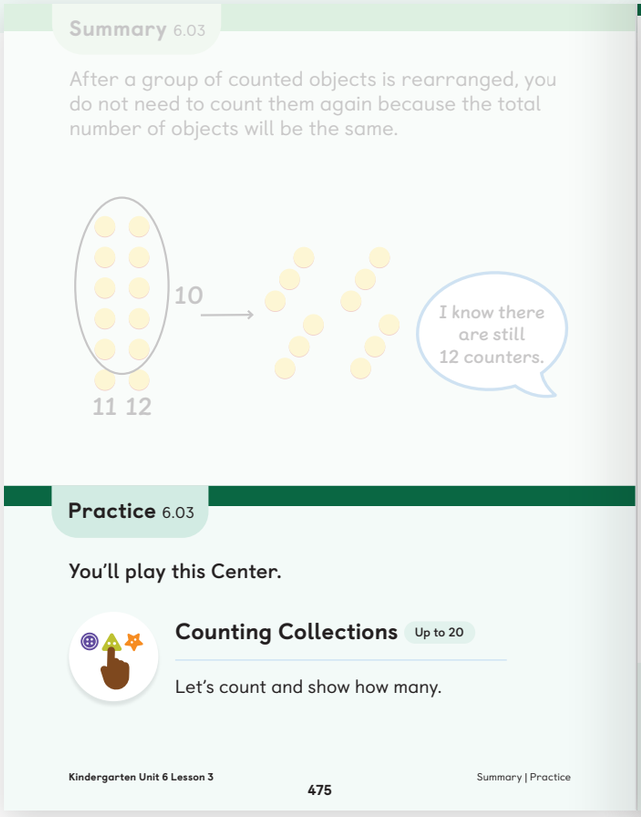
D **Differentiation** See the last page of the lesson for differentiation and Math Language Development support.

Practice

Independent

Provide students with sufficient practice to build and reinforce their conceptual understanding, fluency, and application of mathematical topics, assessment practice, and ongoing spiral review.

Students using print



Summary 6.03

After a group of counted objects is rearranged, you do not need to count them again because the total number of objects will be the same.

10

11 12

I know there are still 12 counters.

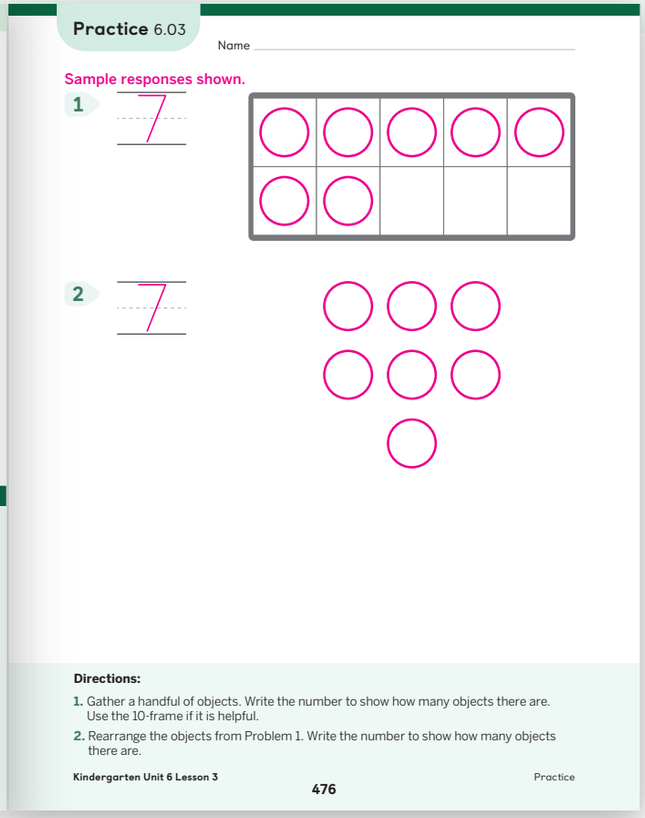
Practice 6.03

You'll play this Center.

Counting Collections Up to 20

Let's count and show how many.

Kindergarten Unit 6 Lesson 3 475 Summary | Practice



Practice 6.03

Name

Sample responses shown.

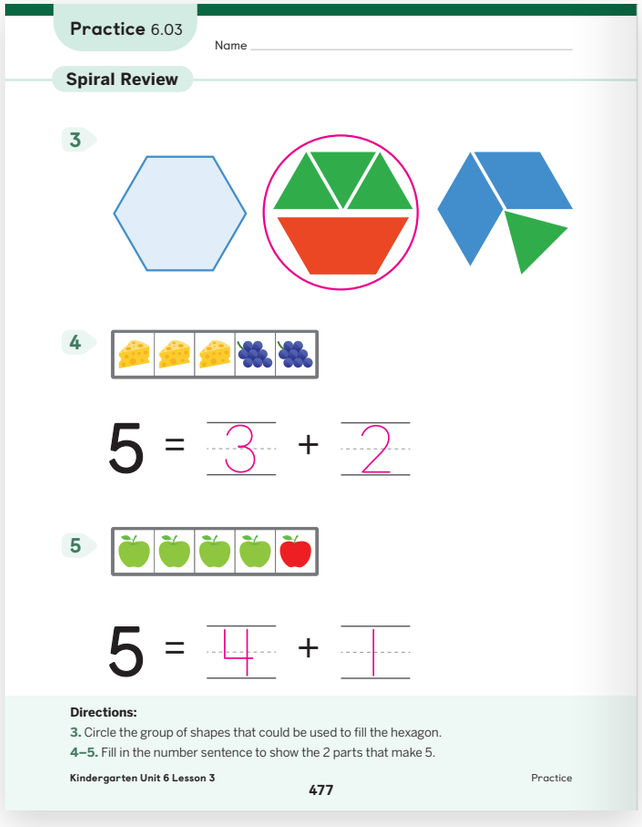
1 7

2 7

Directions:

1. Gather a handful of objects. Write the number to show how many objects there are. Use the 10-frame if it is helpful.
2. Rearrange the objects from Problem 1. Write the number to show how many objects there are.

Kindergarten Unit 6 Lesson 3 476 Practice



Practice 6.03

Name

Spiral Review

3

4

5 = 3 + 2

5

5 = 4 + 1

Directions:

3. Circle the group of shapes that could be used to fill the hexagon.

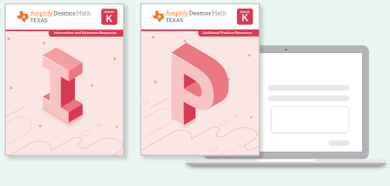
4–5. Fill in the number sentence to show the 2 parts that make 5.

Kindergarten Unit 6 Lesson 3 477 Practice

Practice Problem Item Analysis

	Problem(s)	DOK	TEKS
On-Lesson			
	1, 2	2	K.2.A, K.2.B, K.2.C
Spiral Review			
	3	1	K.6.F
Fluency	4, 5	1	K.2.B, K.2.I, K.3.C

Need more Practice?



Additional practice can be found in the **Practice Resources, Intervention and Extension Resources,** and online resources (item banks, Boost Personalized Learning, and Fluency Practice).

Pairs | 15 min

Let's Play
Counting Collections, Up to 20

Purpose: Students build fluency with counting as they figure out how many are in a collection of up to 20 objects and then represent the quantity and how they counted.

Presentation Screen

Materials

Manipulative Kit:

- Provide students with access to 5-frames and 10-frames. (optional)

Classroom materials:

- Display a collection of 18 objects.
- Distribute a collection of assorted objects (up to 20) to each pair.

Centers Resources:

- Display the Directions and Recording Sheet.
- Distribute one Recording Sheet to each student.
- Provide students with access to Work Mats (optional).

1 Launch

Display the Center materials, Directions, Recording Sheet, and a collection of 18 objects.

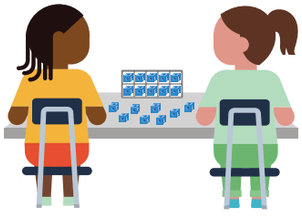
EB **Emergent Bilinguals** Say, "Encourage students to use the center direction sheet to locate and name the materials they will need for this center." ELPS 1.C, 3.C, 3.F

Demonstrate how to play *Counting Collections, Up to 20*. While demonstrating: ELPS 1.C

- **Say**, "You will learn a new way to play *Counting Collections*."
- **Say**, "I need to figure out how many objects are in this collection. First, I will think about how I could arrange the objects to help me count them. I could use a tool, such as a 5-frame, 10-frame, or Work Mat, if it is helpful."
- **Say**, "I will arrange the objects on a 10-frame to help me count them." Arrange the objects on a 10-frame and count the collection by inviting students to count along.
- **Say**, "Now I will record how many objects there are and show how I counted using drawings, numbers, or words." Fill in the Recording Sheet by drawing a picture of the objects on a 10-frame and writing the numeral 18 next to the drawing.
- **Say**, "Work with your partner to figure out how many objects are in your collection. Arrange the objects in a way that helps you figure out how many there are. Show and record how many you counted. You may use a 5-frame, 10-frame, or Work Mat if it is helpful."
- **Say**, "If you have time, choose another collection and play again."

Provide access to 5-frames, 10-frames, and Work Mats.

2 Monitor



Observe how students are representing the total number of objects. They may draw pictures, write a number for each object, or write a numeral to represent the total number of objects.

3 Connect

Display 2 student-created representations of the same collection. Select and sequence the representations as shown in Rows 2 and 3 in the *Differentiation* table.

Use the Think-Pair-Share routine. Ask:

- "What do you notice about how they showed the total number of objects?"
- "What is the same about their work? What is different?"

Key Takeaway: Say, "You can show how many are in a group using drawings or numbers."

CENTER Directions

Counting Collections

Stage 2

1. Talk with your partner about how to count the objects.
2. Count the objects together.
3. Record how many you counted.
4. Choose a new collection and repeat.

Let's count and show how many.

Pairs

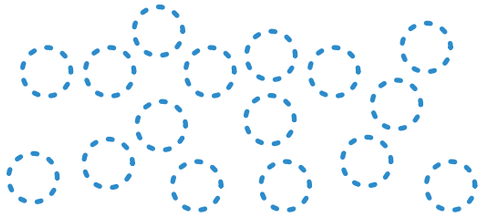
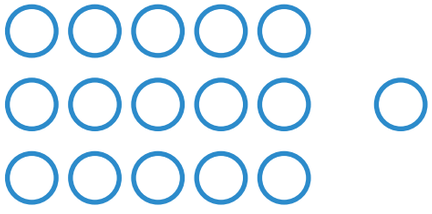
You'll need . . .

5-frames, 10-frames, collection of objects (up to 20), Recording Sheet

70 Counting Collections

Presentation Screen

D Differentiation | Teacher Moves

Look for students who . . .	For example . . .	Provide support . . .
Almost there Trace the objects in the collection without determining the total.		**Support** Ask, "How many objects are there?"
Draw pictures to show the total number of objects in the collection.	 There are 16.	**Strengthen** Ask, "What number can you write to show how many objects there are?"
Write numbers to show the total number of objects in the collection.	16	**Strengthen** Ask, "How do you know that the number you wrote shows the number of objects you counted?"

Differentiation Use after Lesson 3

Lesson Goal: Determine the quantities of groups of 11–20 objects.

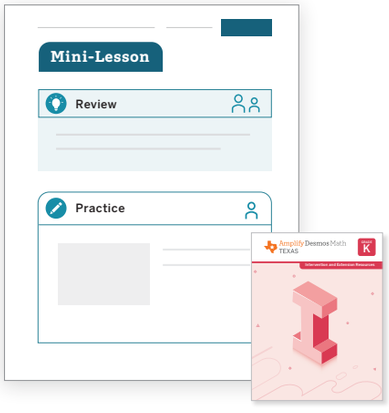
Support

Provide targeted intervention for students by using these resources.

If students count a different total after rearranging the objects:

Respond:

- Assign the *Finding How Many When Objects are Rearranged* Mini-Lesson. | 15 min
- Invite students to discuss the animation from Activity 2 Connect with a partner.



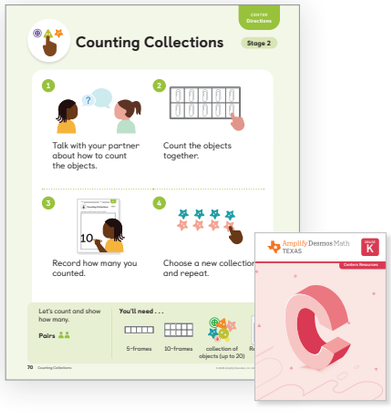
Strengthen

Reinforce students' understanding of the concepts assessed by using these resources.

If students recount the objects each time they are rearranged:

Respond:

- Invite students to play this **Center.** | 15 min
  Counting Collections: Up to 20
- Have students complete **Lesson 3 Practice.** | 15 min
- **Item Bank**



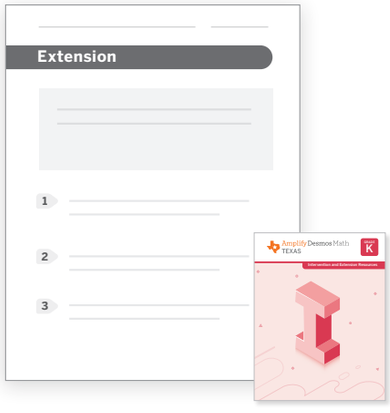
Stretch

Challenge students and extend their learning with these resources.

If students restate the total after rearranging without recounting:

Respond:

- Invite students to explore the **Sub-Unit 1 Extension Activities.** | 15 min
- Revisit Activity 2 and invite students to respond to the **Stretch** question from the *Differentiation: Teacher Moves table.* | 5 min



Support, *Strengthen*, and *Stretch* learning by assigning these digital resources that adjust to each student's current level of skill and understanding.
• **Boost Personalized Learning** • **Fluency Practice** • **Math Adventures**

Math Language Development

EB Use the **Math Language Development Resources** for further language support with all your students, including those building English proficiency.

- English/Spanish cognates
- Vocabulary routines

Professional Learning

How can the work that students engaged in during this lesson help you learn about their understanding of counting and conservation of number?