

Tax and Tip

Let's learn about sales tax and tips.



Warm-up Notice and Wonder

At the bookstore, Shawn is surprised by the amount that shows up on the cash register that is required to purchase a certain book

What do you notice? What do you wonder?



> 1. I notice ...

> 2. I wonder ...



Activity 1 Third Place Books

Noah’s grandmother owns and manages two bookstores in different counties in the Kansas City area —one on the Kansas side, and one on the Missouri side.

Each county has its own sales tax rate.

Plan ahead: What goals do you have for this activity and how will you achieve them?

- 1. Complete each table shown by determining the sales tax and total cost of each book.

Kansas store

Title	Price (\$)	Sales tax (\$)	Total cost (\$)
<i>The House on Mango Street</i>	8.00	0.48	8.48
<i>The Skin I'm In</i>	25.00	1.50	
<i>A Wrinkle in Time</i>	1.00		
<i>Brown Girl Dreaming</i>	12.00		
	x		

Missouri store

Title	Price (\$)	Sales tax (\$)	Total cost (\$)
<i>The House on Mango Street</i>	8.00	0.60	8.60
<i>The Skin I'm In</i>	25.00	1.88	
<i>A Wrinkle in Time</i>	1.00		
<i>Brown Girl Dreaming</i>	12.00		
	x		

- 2. Which book will cost less, including sales tax: a \$20.99 book at the Kansas store, or a \$20.49 book at Missouri store? Consider drawing tape diagrams to help with your thinking.

Activity 2 Tipping

Mai is a server at a diner. In the United States, most servers at restaurants earn an hourly wage plus tips from customers they serve. Refer to the check shown from one of Mai's recent customers.

- 1. At Mai's diner, customers usually tip between 15% and 25% of the cost of their meal.
 - a Mai tells her colleague that her customers appeared happy with their meal, so she predicts that they will leave a tip that is 20% of the total (including sales tax). What is Mai's prediction, in dollars?
 - b Mai's colleague, Tyler, predicts the customers will leave a \$8.00 tip. Write the tip as a percentage of the total cost. Round to the nearest tenth of a percent.

Date: Sept. 12th
Time: 6:55 PM
Server: Mai

Chicken Parm	15.50
Eggplant Parm	12.50
Lemon Soda	2.00
Tea	3.00
Subtotal	32.00
Sales tax (9.5%)	3.04
Total	35.04

- 2. The customers actually leave \$43.00, and tell Mai that the extra money is for her tip.
 - a What percentage of the total did the customers tip, to the nearest tenth of a percent?
 - b Whose estimate was more accurate: Mai's or Tyler's?

Are you ready for more?

Clare was the customer that paid for the meal in this activity. She noticed that the sales tax of 9.5% and the tip of 22.7% would combine to be 32.2%, but that the \$43 she paid was actually 34.4% more than the cost of the meal. She wonders why these two percents are not the same. Explain to Clare why they are not the same.

STOP

Summary

In today's lesson . . .

You calculated percentages related to sales tax and tips. **Sales tax** is an amount of money that a government agency collects on the sale of certain items. Often, the tax rate is given as a percentage of the cost.

Fractional percentages often arise when a state or city charges a sales tax on a purchase. For example, the sales tax in Arizona is 7.5%. This means that when someone purchases an item, the total cost of that item is actually increased by 0.075 times the amount on the price tag.

The total cost to the customer is the price tag cost plus the sales tax. This is a *percent increase*. For example, in Arizona, the total cost to a customer is 107.5% of the price listed on the tag.

A **tip** is an amount of money that a person gives someone who provides a service, such as restaurant servers, hairdressers, and delivery drivers. It is customary in many restaurants to tip the server about 20% of the cost of the meal. If a person plans to leave a 20% tip on a meal, then the total cost will be 120% of the cost of the meal.

> Reflect:



- 4. Determine the following values using what you know about percentages. Show your thinking.
- a 3.8% of 25

 - b 0.2% of 50

 - c 180.5% of 99
- 5. A hiking trail is $\frac{7}{8}$ of a mile long. Jada and Kiran hike the trail together, completing it in $\frac{1}{4}$ of an hour. What was Jada and Kiran's average speed? Show your thinking.
- 6. Tyler bought a backpack that was on sale for 35% off. If the sale price of the backpack was \$26, what was the original price of the backpack? Show your thinking.