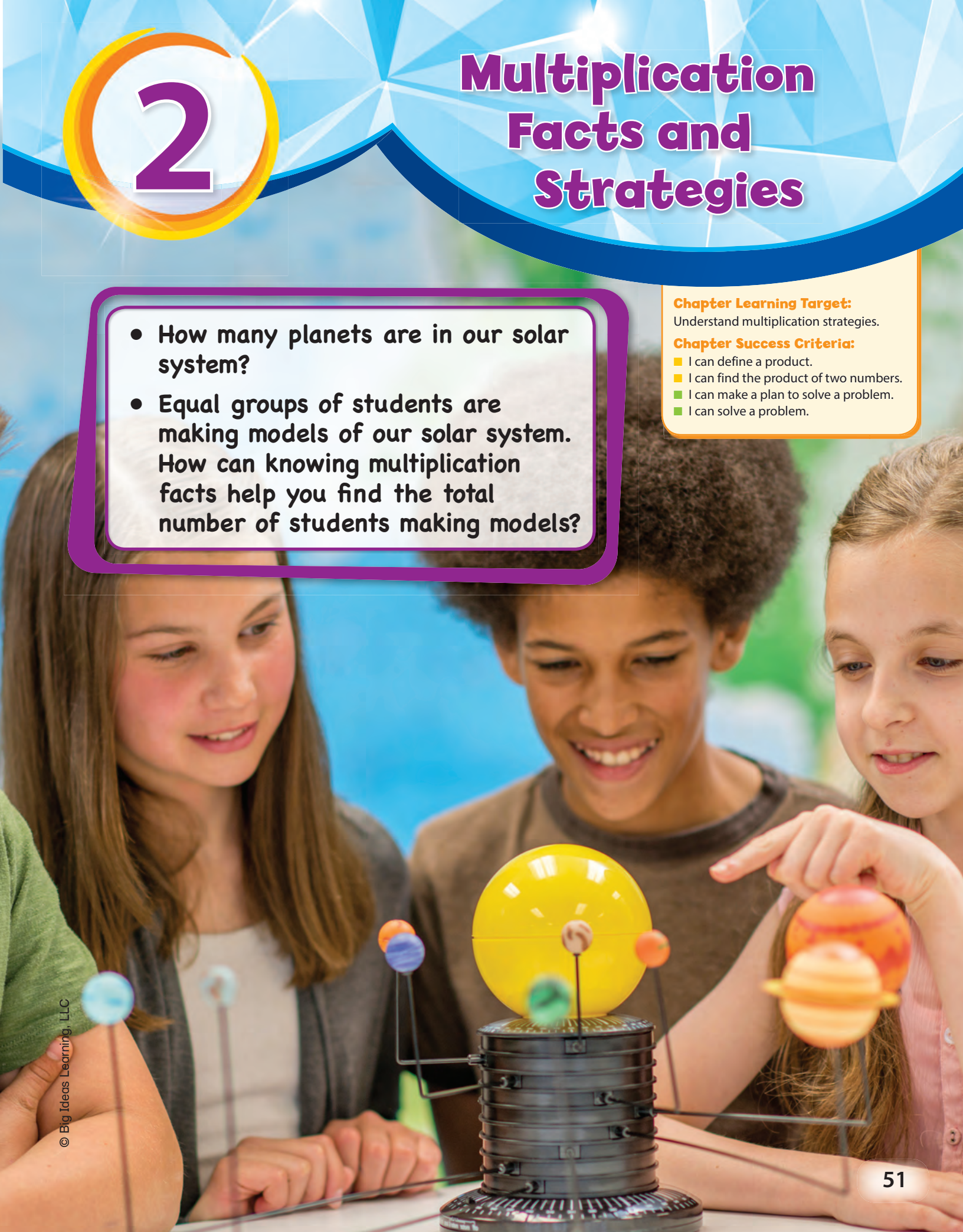
# 2 Multiplication Facts and Strategies

- How many planets are in our solar system?
- Equal groups of students are making models of our solar system. How can knowing multiplication facts help you find the total number of students making models?

**Chapter Learning Target:**
Understand multiplication strategies.

**Chapter Success Criteria:**
- I can define a product.
- I can find the product of two numbers.
- I can make a plan to solve a problem.
- I can solve a problem.



Name _____

# 2 Vocabulary

## Review Words

array
equal groups
repeated addition

## Organize It

Use the review words to complete the graphic organizer.

| Ways to Show Multiplication | Examples | Non-Examples |
|---|---|---|
| |  |  |
| |  |  |
| | $4 + 4 + 4$ | $2 + 3 + 4$ |

## Define It

Use your vocabulary cards to match.

**1.** multiple

The product of any number and 1 is that number.

$10 \times 1 = 10$ $1 \times 2 = 2$

**2.** Multiplication Property of Zero

The product of a number and any other counting number

**3.** Multiplication Property of One

The product of any number and 0 is 0.

$5 \times 0 = 0$ $0 \times 2 = 0$

# Chapter 2 Vocabulary Cards

Distributive Property (with addition)

multiple

Multiplication Property of One

Multiplication Property of Zero

The product of a number and any other counting number

$1 \times 5 = 5$

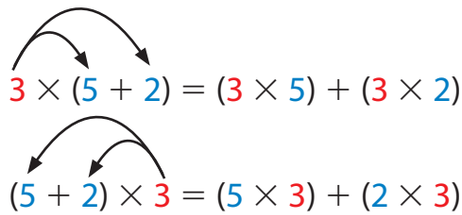
$2 \times 5 = 10$

$3 \times 5 = 15$

$4 \times 5 = 20$

multiples of 5








The product of any number and 0 is 0.

$5 \times 0 = 0$ $0 \times 2 = 0$



The product of any number and 1 is that number.

$10 \times 1 = 10$ $1 \times 2 = 2$

Name _____

# Multiply by 2

2.1

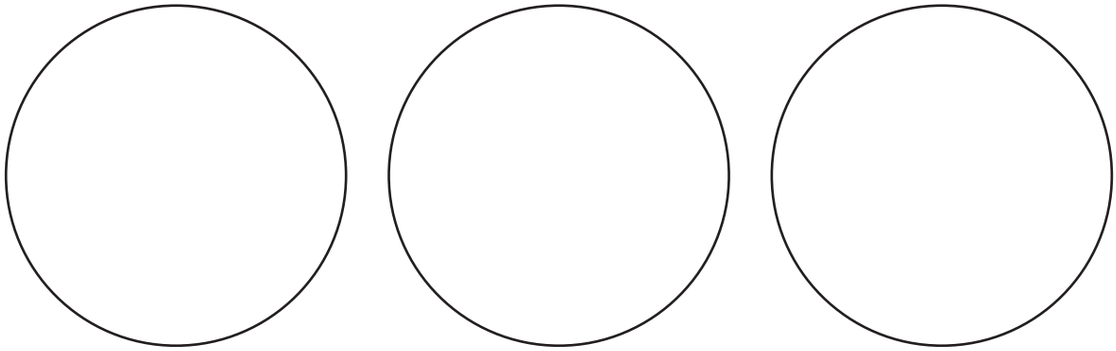
**Learning Target:** Multiply by 2.

**Success Criteria:**

- I can use a model to multiply by 2.
- I can find the product of a number and 2.

## Explore and Grow

Model $3 \times 2$ using equal groups.



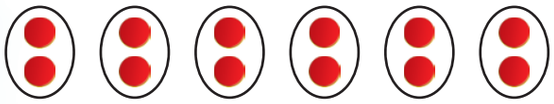
$3 \times 2 =$ _____

MP **Structure** How can you use the model to find $4 \times 2$?

## Think and Grow: Multiply by 2

**Example** Find $6 \times 2$.

Model six groups of two.



$2 + 2 + 2 + 2 + 2 + 2 =$ _____

6

$6 \times 2 =$ _____ or $\times \ 2$

$\square$

A **multiple** of a number is the product of that number and any other counting number.

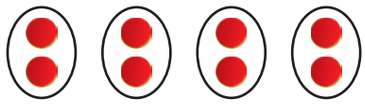
**Example** Complete the table and the statements.

| 2s Facts | |
|---|---|
| $1 \times 2 =$ _____ | $6 \times 2 =$ _____ |
| $2 \times 2 =$ _____ | $7 \times 2 =$ _____ |
| $3 \times 2 =$ _____ | $8 \times 2 =$ _____ |
| $4 \times 2 =$ _____ | $9 \times 2 =$ _____ |
| $5 \times 2 =$ _____ | $10 \times 2 =$ _____ |

- Multiples of 2 end in _____, _____, _____, _____, or _____.
- A number times 2 is always an _____ number.

## Show and Grow

**1.** Complete the equations for the model.



_____ + _____ + _____ + _____ = _____

_____ × _____ = _____

Find the product.

**2.** $7 \times 2 =$ _____

**3.** $2 \times 3 =$ _____

Name _____

# Apply and Grow: Practice

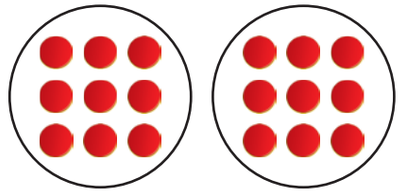
Complete the equations for the model.

**4.**

_____ + _____ + _____ + _____ + _____ = _____

_____ × _____ = _____

**5.**



_____ + _____ = _____

_____ × _____ = _____

Find the product.

**6.** $\begin{array}{r} 2 \\ \times\ 2 \\ \hline \end{array}$

**7.** $\begin{array}{r} 3 \\ \times\ 2 \\ \hline \end{array}$

**8.** $\begin{array}{r} 2 \\ \times\ 10 \\ \hline \end{array}$

**9.** $\begin{array}{r} 1 \\ \times\ 2 \\ \hline \end{array}$

**10.** $\begin{array}{r} 6 \\ \times\ 2 \\ \hline \end{array}$

**11.** $\begin{array}{r} 2 \\ \times\ 8 \\ \hline \end{array}$

**12.** $\begin{array}{r} 4 \\ \times\ 2 \\ \hline \end{array}$

**13.** $\begin{array}{r} 7 \\ \times\ 2 \\ \hline \end{array}$

Find the missing factor.

**14.** $2 \times \_\_\_\_ = 14$

**15.** $2 \times \_\_\_\_ = 20$

**16.** $5 \times \_\_\_\_ = 10$

**17.** How many gloves are in 9 pairs of gloves?

**18.** MP **Structure** How are the models similar? How are they different?

## Think and Grow: Modeling Real Life

A sled dog team must have at least 6 rows of 2 dogs. A musher has 15 dogs. Does he have enough dogs for a team?

Multiplication equation:

The musher _____ have enough dogs for a team.

## Show and Grow

**19.** Your teacher asks you to make 2 rows of 8 chairs. There are 18 chairs. Do you have enough chairs?

**20.** You have 5 pairs of socks. Do you have enough socks to make 12 sock puppets?

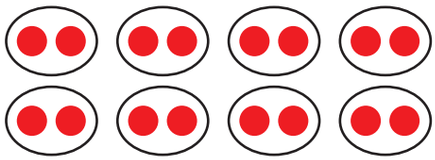
**DIG DEEPER!** You want to make as many sock puppets as you can with the socks that you have. You need 2 googly eyes for each puppet. How many googly eyes do you need?

Name _____

# Homework & Practice 2.1

**Learning Target:** Multiply by 2.

**Example** Find $8 \times 2$.



$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 =$ 16

8

$8 \times 2 =$ 16 or $\times$ 2

16

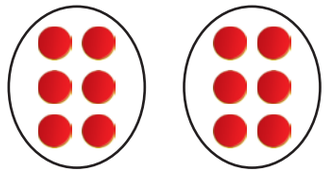
Complete the equations for the model.

**1.**

_____ + _____ + _____ = _____

_____ × _____ = _____

**2.**



_____ + _____ = _____

_____ × _____ = _____

Find the product.

**3.** 4 × 2

**4.** 10 × 2

**5.** 2 × 8

**6.** 2 × 9

**7.** 7 × 2

**8.** 2 × 2

**9.** 5 × 2

**10.** 2 × 1

Find the missing factor.

**11.** $2 \times$ _____ $= 16$

**12.** $2 \times$ _____ $= 18$

**13.** _____ $\times 3 = 6$

**14.** A pendulum swings once every 2 seconds. How long will it take for the pendulum to swing 4 times?

**15.** **Repeated Reasoning** Complete the multiplication table.

| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | | | | | | | | | |

**16.** You buy a shirt that costs $7 and a pair of pants that costs 2 times as much. Write a multiplication equation to show the cost of the pants.

_____ × _____ = _____

How much money do you spend in all? _____

**17.** **Modeling Real Life** A plumber needs to install handles in 9 sinks. Each sink has a hot water handle and a cold water handle. He has 19 handles. Does he have enough handles?

**18.** **Modeling Real Life** You have 6 pairs of chopsticks. Do you have enough chopsticks for 4 people if they each get a pair?

**DIG DEEPER!** You want to make wrappers for each pair of chopsticks that you have. You need 2 pieces of paper for each wrapper. How many pieces of paper do you need?

## Review & Refresh

Compare.

**19.** 923 ◯ 854

**20.** 621 ◯ 63

**21.** 746 ◯ 752

Name _____

# Multiply by 5 2.2

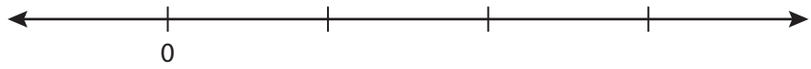
**Learning Target:** Multiply by 5.

**Success Criteria:**

- I can use a model to multiply by 5.
- I can find the product of a number and 5.

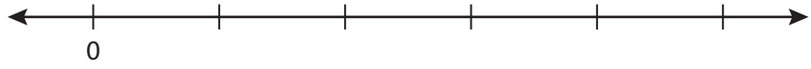
## Explore and Grow

Model $3 \times 5$ on the number line.




$3 \times 5 =$ _____

Model $4 \times 5$ on the number line.



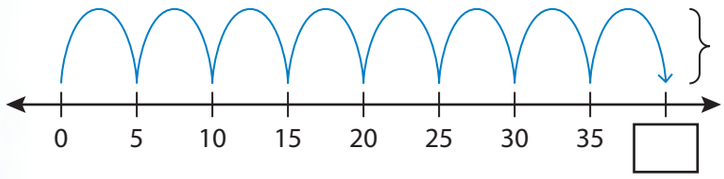

$4 \times 5 =$ _____

MP **Structure** Compare your models. How are the models the same? How are they different?

## Think and Grow: Multiply by 5

**Example** Find $8 \times 5$.

Skip count by 5s eight times.




8 jumps of 5

$8 \times 5 =$ _____ or $\begin{array}{r} 8 \\ \times\ 5 \\ \hline \square \end{array}$

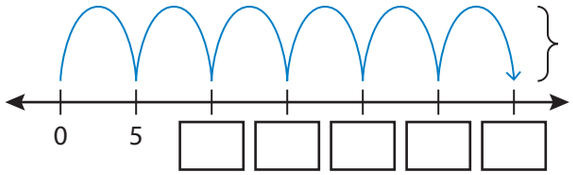
**Example** Complete the table and the statements.

| 5s Facts | |
|---|---|
| $1 \times 5 =$ _____ | $6 \times 5 =$ _____ |
| $2 \times 5 =$ _____ | $7 \times 5 =$ _____ |
| $3 \times 5 =$ _____ | $8 \times 5 =$ _____ |
| $4 \times 5 =$ _____ | $9 \times 5 =$ _____ |
| $5 \times 5 =$ _____ | $10 \times 5 =$ _____ |

- Multiples of 5 end in _____ or _____.
- An odd number times 5 is always an _____ number.
- An even number times 5 is always an _____ number.

## Show and Grow

**1.** Complete the model and the equation.




_____ jumps of 5

_____ × _____ = _____

Find the product.

**2.** $9 \times 5 =$ _____

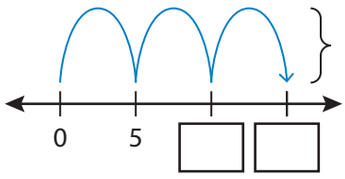
**3.** $5 \times 4 =$ _____

Name _____

# Apply and Grow: Practice

Complete the model and the equation.

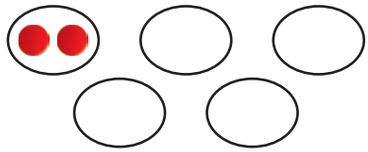
**4.**




_____ jumps of 5

_____ × _____ = _____

**5.** 5 groups of 2



_____ × _____ = _____

Find the product.

**6.** 4 × 5

**7.** 5 × 10

**8.** 8 × 5

**9.** 9 × 5

**10.** 6 × 5

**11.** 5 × 1

**12.** 5 × 5

**13.** 5 × 7

Find the missing factor.

**14.** 5 × _____ = 35

**15.** _____ × 5 = 50

**16.** 10 = 2 × _____

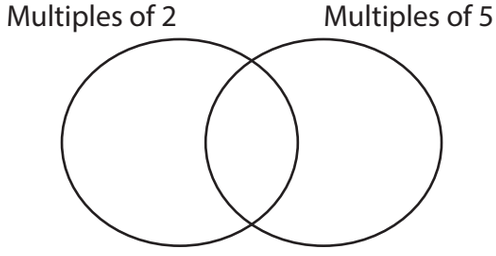
**17.** MP **Number Sense** Which numbers are multiples of 5?
Think: How do you know?

50 37 63 20 92 12 5 85

**18.** DIG DEEPER! Use each number to complete the Venn diagram.

4 10 14 20 12

15 35 48 6 5



## Think and Grow: Modeling Real Life

A summer camp is in session 5 days each week for 8 weeks. Each day, 1 camper is chosen to lead the camp song. There are 35 campers. Can each camper lead the camp song?

Multiplication equation:

Each camper _____ lead the camp song.

## Show and Grow

**19.** Your teacher has 5 packs of spinning toys. There are 5 toys in each pack. There are 27 students in your class. Does every student get a spinning toy?

**20.** You recycle 9 bottles and receive 5¢ for each bottle. You spend 25¢ on a pack of gum. How many cents do you have left?

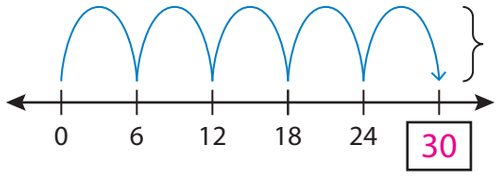
DIG DEEPER! How many more bottles do you need to recycle to buy another pack of gum?

Name _____

# Homework & Practice 2.2

**Learning Target:** Multiply by 5.

**Example** Find $5 \times 6$.

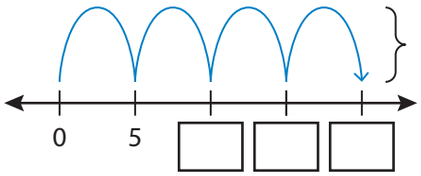



5 jumps of 6

$5 \times 6 =$ 30 or $\begin{array}{r} 5 \\ \times\ 6 \\ \hline 30 \end{array}$

Complete the model and the equation.

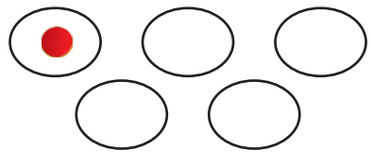
**1.**




_____ jumps of 5

_____ × _____ = _____

**2.** 5 groups of 1



_____ × _____ = _____

Find the product.

**3.** $\begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}$

**4.** $\begin{array}{r} 5 \\ \times\ 10 \\ \hline \end{array}$

**5.** $\begin{array}{r} 8 \\ \times\ 5 \\ \hline \end{array}$

**6.** $\begin{array}{r} 5 \\ \times\ 2 \\ \hline \end{array}$

**7.** $\begin{array}{r} 5 \\ \times\ 9 \\ \hline \end{array}$

**8.** $\begin{array}{r} 5 \\ \times\ 7 \\ \hline \end{array}$

**9.** $\begin{array}{r} 5 \\ \times\ 5 \\ \hline \end{array}$

**10.** $\begin{array}{r} 5 \\ \times\ 6 \\ \hline \end{array}$

Find the missing factor.

**11.** $5 \times$ _____ $= 20$

**12.** $45 = 5 \times$ _____

**13.** _____ $\times 5 = 15$

**14.** There are 8 teams in a basketball tournament. Each team has 5 players. How many players are in the tournament?

**15.** **Reasoning** Newton has some nickels. He says they have a total value of 14 cents. Explain how you know that Newton is incorrect.

**16.** **Number Sense** Tell whether the number is a multiple of 2, 5, or both. Explain.

25

16

**17.** **Modeling Real Life** A firefighter visits 5 houses. Each house has 3 smoke detectors that need a new battery. She has 18 batteries. Does every smoke detector get a new battery?

**18.** **Modeling Real Life** Descartes earns $5 for each lawn that he mows. He mows 7 lawns. He spends $20 on a video game. How much money does he have left?

**DIG DEEPER!** How many more lawns does Descartes have to mow to buy another video game?

## Review & Refresh

**19.** Count by tens.

_____, 20, _____, 40, _____, _____, 70, _____, _____, _____

Name _____

# Multiply by 10 2.3

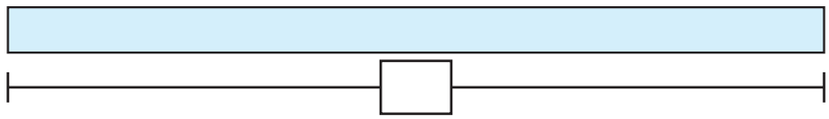
**Learning Target:** Multiply by 10.

**Success Criteria:**

- I can use a model to multiply by 10.
- I can find the product of a number and 10.

## Explore and Grow

Model $6 \times 10$ on the tape diagram.



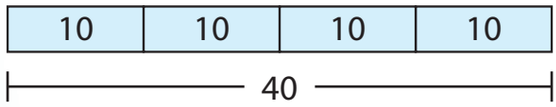
$6 \times 10 =$ _____

MP **Structure** How can you use the model to find $7 \times 10$?

## Think and Grow: Multiply by 10

**Example** Find $4 \times 10$.

Model four groups of ten.




$10 + 10 + 10 + 10 =$ _____

$4 \times 10 =$ _____ or $\begin{array}{r} 4 \\ \times\ 10 \\ \hline \square \end{array}$

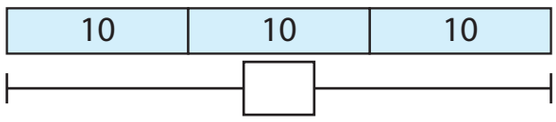
**Example** Complete the table and the statements.

| 10s Facts | |
|---|---|
| $1 \times 10 =$ _____ | $6 \times 10 =$ _____ |
| $2 \times 10 =$ _____ | $7 \times 10 =$ _____ |
| $3 \times 10 =$ _____ | $8 \times 10 =$ _____ |
| $4 \times 10 =$ _____ | $9 \times 10 =$ _____ |
| $5 \times 10 =$ _____ | $10 \times 10 =$ _____ |

- Multiples of 10 end in _____.
- A number times 10 is always an _____ number.

## Show and Grow

**1.** Complete the model and the equations.




_____ + _____ + _____ = _____

_____ × _____ = _____

Find the product.

**2.** $8 \times 10 =$ _____

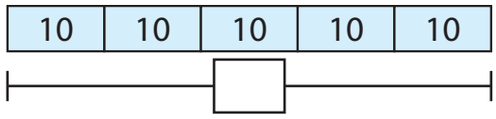
**3.** $10 \times 5 =$ _____

Name _____

# Apply and Grow: Practice

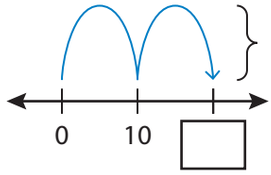
Complete the model and the equation.

**4.**




_____ × _____ = _____

**5.**




_____ jumps of 10

_____ × _____ = _____

Find the product.

| | | | |
|---|---|---|---|
| **6.** 4 × 10 | **7.** 10 × 10 | **8.** 10 × 7 | **9.** 9 × 10 |
| **10.** 6 × 10 | **11.** 2 × 10 | **12.** 10 × 3 | **13.** 10 × 1 |

Tell whether the product is *even* or *odd*.

| | | |
|---|---|---|
| **14.** $6 \times 2$ _____ | **15.** $5 \times 3$ _____ | **16.** $8 \times 10$ _____ |
| **17.** $5 \times 10$ _____ | **18.** $10 \times 7$ _____ | **19.** $5 \times 7$ _____ |

**20.** There are 10 millimeters in 1 centimeter. The width of a cell phone is 6 centimeters. What is the width of the phone in millimeters?

**21.** **Patterns** Complete the table using the words *even* or *odd*.

| × | 2 | 5 | 10 |
|---|---|---|---|
| even number | | | |
| odd number | | | |

## Think and Grow: Modeling Real Life

Newton has 8 dimes. Descartes has 75¢. Who has more money?

Multiplication equation:

_____ has more money.

## Show and Grow

**22.** You have 10 nickels. Your friend has 46¢. Who has more money?

**23.** You have 34 trading cards. You buy 3 packs of cards. Each pack has 10 cards. How many trading cards do you have now?

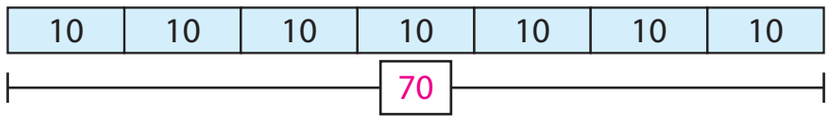
**24.** Your teacher has 10 calculators. Each calculator uses 4 batteries. The batteries come in packs of 10. How many packs of batteries does your teacher buy? Explain.

Name _____

## Homework & Practice 2.3

**Learning Target:** Multiply by 10.

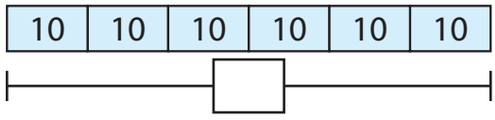
**Example** Find $7 \times 10$.




$7 \times 10 =$ 70 or $\begin{array}{r} 7 \\ \times\ 10 \\ \hline 70 \end{array}$

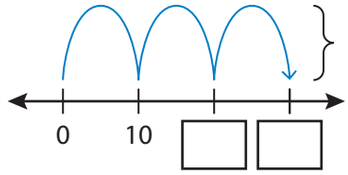
Complete the model and the equation.

**1.**




_____ × _____ = _____

**2.**




_____ jumps of 10

_____ × _____ = _____

Find the product.

**3.** $\begin{array}{r} 10 \\ \times\ 4 \\ \hline \end{array}$

**4.** $\begin{array}{r} 8 \\ \times\ 10 \\ \hline \end{array}$

**5.** $\begin{array}{r} 10 \\ \times\ 10 \\ \hline \end{array}$

**6.** $\begin{array}{r} 10 \\ \times\ 2 \\ \hline \end{array}$

**7.** $\begin{array}{r} 10 \\ \times\ 9 \\ \hline \end{array}$

**8.** $\begin{array}{r} 10 \\ \times\ 7 \\ \hline \end{array}$

**9.** $\begin{array}{r} 10 \\ \times\ 1 \\ \hline \end{array}$

**10.** $\begin{array}{r} 10 \\ \times\ 5 \\ \hline \end{array}$

Find the missing factor.

**11.** $10 \times$ _____ $= 90$

**12.** $60 = 10 \times$ _____

**13.** _____ $\times 10 = 70$

**14.** **Structure** You buy a thank-you card for $1. You pay using all dimes. How many dimes do you use?

**15.** **Number Sense** In bowling, knocking down all 10 pins at once is called a *strike*. You roll strikes in your first two turns and knock down 4 pins in your third turn. How many pins do you knock down in all?

**16.** **Reasoning** Ten years is called a *decade*. Your neighbor is 70 years old. For how many decades has he been alive? Explain.

**17.** **Modeling Real Life** You have 2 dimes. Your friend has 24¢. Who has more money?

**18.** **Modeling Real Life** Your teacher has 35 balloons. She buys 4 packs of balloons. Each pack has 10 balloons. How many balloons does she have now?

## Review & Refresh

Find the difference.

**19.**
$$\begin{array}{r} 489 \\ -\ 187 \\ \hline \end{array}$$

**20.**
$$\begin{array}{r} 625 \\ -\ 297 \\ \hline \end{array}$$

**21.**
$$\begin{array}{r} 951 \\ -\ 682 \\ \hline \end{array}$$

Name _____

# Multiply by 0 or 1

2.4

**Learning Target:** Use properties to multiply by 0 or 1.

**Success Criteria:**

- I can explain the multiplication properties of 0 and 1.
- I can find the product of a number and 0.
- I can find the product of a number and 1.

## Explore and Grow

Draw an array to find the products.

$5 \times 3 =$ _____ | $5 \times 2 =$ _____ | $5 \times 1 =$ _____

What pattern do you see?

MP **Repeated Reasoning** How can you use the pattern to find $5 \times 0$?

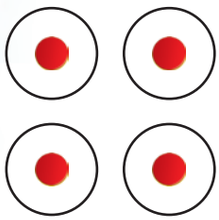
$5 \times 0 =$ _____

# Think and Grow: The Multiplication Properties of 0 and 1

**Multiplication Property of Zero:** The product of any number and 0 is 0.

**Multiplication Property of One:** The product of any number and 1 is that number.

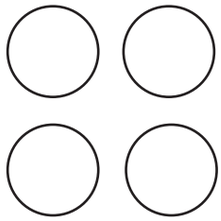
**Example** There are 4 groups with 1 counter in each group. How many counters are there in all?



4 groups of 1

$4 \times 1 =$ _____ or $\begin{array}{r} 4 \\ \times\ 1 \\ \hline \square \end{array}$

**Example** There are 4 groups with 0 counters in each group. How many counters are there in all?



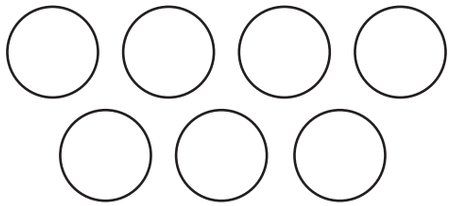
4 groups of 0

$4 \times 0 =$ _____ or $\begin{array}{r} 4 \\ \times\ 0 \\ \hline \square \end{array}$


## Show and Grow

Write an equation for the model.

**1.**



_____ × _____ = _____

**2.**

_____ × _____ = _____

Find the product.

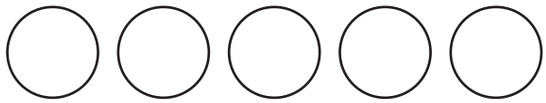
**3.** $8 \times 1 =$ _____

**4.** $6 \times 0 =$ _____

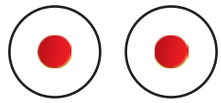
Name _____

## Apply and Grow: Practice

Complete the equation for the model.

**5.** 

_____ × _____ = _____

**6.** 

_____ × _____ = _____

Find the product.

**7.** $\begin{array}{r} 1 \\ \times\ 1 \\ \hline \end{array}$

**8.** $\begin{array}{r} 2 \\ \times\ 0 \\ \hline \end{array}$

**9.** $\begin{array}{r} 0 \\ \times\ 0 \\ \hline \end{array}$

**10.** $\begin{array}{r} 1 \\ \times\ 9 \\ \hline \end{array}$

Find the missing factor.

**11.** 10 × _____ = 0

**12.** _____ × 1 = 5

**13.** 1 × _____ = 8

Compare.

**14.** 1 × 4 ◯ 6 × 0

**15.** 9 × 0 ◯ 7 × 0

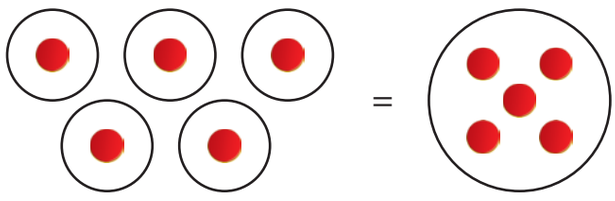
**16.** 3 × 1 ◯ 6 × 1

**17.** MP **Logic** Complete each statement with *always*, *sometimes*, or *never*.

The product of any number and 0 is _____ 0.

The product of any number and 1 is _____ that number.

**18.** MP **Structure** Use the model to complete the statements. Which two properties are shown?



_____ groups of _____ = 1 group of _____

_____ × 1 = _____ × _____

_____ = 5

## Think and Grow: Modeling Real Life

There are 4 performers riding unicycles and 3 performers using balance boards in a talent show. How many wheels are used in the talent show?

Multiplication equations:

Addition equation:

There are _____ wheels used in the talent show.

**Unicycle:** 1 wheel

**Balance board:** no wheels

## Show and Grow

**19.** A *solo* is a performance by 1 person. A *duet* is a performance by 2 people. There are 5 students performing solos and 0 students performing duets at a school concert. How many students perform a solo or a duet?

**20.** A group of 6 adults and 9 students attend a school concert. What is the total cost for the group?

| School Concert | |
|---|---|
| **Age** | **Ticket Price** |
| Adult | $1 |
| Student | Free |

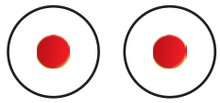
DIG DEEPER! How much money would it cost the group to attend the concert if the tickets cost $1 for all ages? Explain.

Name _____

# Homework & Practice 2.4

**Learning Target:** Use properties to multiply by 0 and 1.

**Example** There are 2 groups with 1 counter in each group. How many counters are there in all?



2 groups of 1

$2 \times 1 =$ 2 or $\begin{array}{r} 2 \\ \times\ 1 \\ \hline \boxed{2} \end{array}$

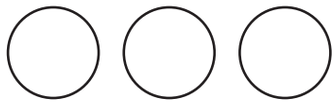
**Example** There are 2 groups with 0 counters in each group. How many counters are there in all?

2 groups of 0

$2 \times 0 =$ 0 or $\begin{array}{r} 2 \\ \times\ 0 \\ \hline \boxed{0} \end{array}$

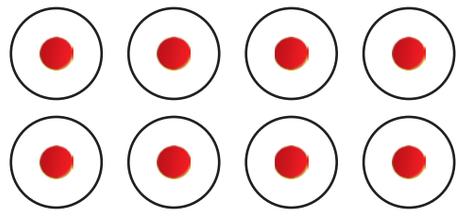
Complete the equation for the model.

**1.**



_____ × _____ = _____

**2.**



_____ × _____ = _____

Find the product.

**3.** $\begin{array}{r} 10 \\ \times\ 1 \\ \hline \end{array}$

**4.** $\begin{array}{r} 6 \\ \times\ 0 \\ \hline \end{array}$

**5.** $\begin{array}{r} 1 \\ \times\ 7 \\ \hline \end{array}$

**6.** $\begin{array}{r} 0 \\ \times\ 1 \\ \hline \end{array}$

Find the missing factor.

**7.** _____ × 4 = 0

**8.** 1 × _____ = 2

**9.** 9 × _____ = 9

Compare.

**10.** $0 \times 9 \bigcirc 10 \times 0$

**11.** $4 \times 1 \bigcirc 8 \times 0$

**12.** $6 \times 1 \bigcirc 1 \times 6$

**13.** **Logic** Which equation is true?

$8 \times 0 \stackrel{?}{=} 8 + 0$ $\quad$ $3 \times 1 \stackrel{?}{=} 3 + 1$

$6 + 1 \stackrel{?}{=} 6 \times 1$ $\quad$ $4 \times 1 \stackrel{?}{=} 4 + 0$

**14.** **Writing** How are the problems the same? How are they different?

$5 \times 1 = 5$ $\quad$ $5 + 0 = 5$

**15.** **Modeling Real Life** U.S. presidents can serve two 4-year terms. A president serves the first term, but is not reelected. How many years does the president serve?

**16.** **Modeling Real Life** There are 5 adults and 8 children in a group. What is the total cost for the group to ride the Ferris wheel?

| Ferris Wheel | |
|---|---|
| **Age** | **Ticket Price** |
| Adult | $1 |
| Child | Free |

DIG DEEPER! How much money would it cost the group to ride the Ferris wheel if the tickets cost $1 for all ages? Explain.

## Review & Refresh

**17.** Use the array to fill in the blanks.

_____ rows _____ columns

_____ × _____ = _____

Name _____

# Use the Distributive Property

2.5

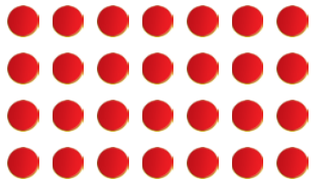
**Learning Target:** Use the Distributive Property to multiply.

**Success Criteria:**

- I can use known facts to find a product.
- I can find the sum of products.
- I can explain how to use the Distributive Property.

## Explore and Grow

Break apart the $4 \times 7$ array into two smaller arrays. Write an equation for each new array.



Equation: _____ Equation: _____

MP **Structure** Find the sum of your two products. Compare the sum to the total number of objects in the original array. What do you notice?

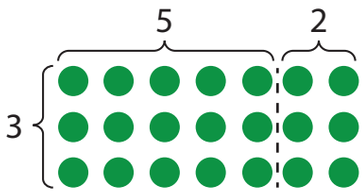
# Think and Grow: Using the Distributive Property with Addition

**Distributive Property (with addition)**

$3 \times (5 + 2) = (3 \times 5) + (3 \times 2)$ $\quad$ $(5 + 2) \times 3 = (5 \times 3) + (2 \times 3)$

**Example** Use the Distributive Property to find $3 \times 7$.

**One Way:** Rewrite 7 as $5 + 2$.




$3 \times 7 = \quad 3 \times (5 + 2)$

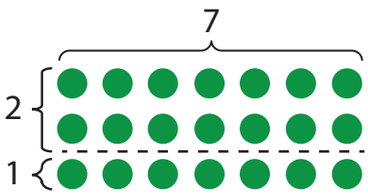
$3 \times 7 = (3 \times 5) + (3 \times 2)$

$3 \times 7 = \_\_\_\_ + \_\_\_\_$

$3 \times 7 = \quad \_\_\_\_$

*Distribute* the 3 to the 5 and the 2.

**Another Way:** Rewrite 3 as $2 + 1$.




$3 \times 7 = \quad (2 + 1) \times 7$

$3 \times 7 = (2 \times 7) + (1 \times 7)$

$3 \times 7 = \_\_\_\_ + \_\_\_\_$

$3 \times 7 = \quad \_\_\_\_$

*Distribute* the 7 to the 2 and the 1.

## Show and Grow

**1.** Use the Distributive Property to show two different ways to find $2 \times 4$.

$2 \times 4 = \quad 2 \times (\_\_\_\_ + \_\_\_\_)$

$2 \times 4 = (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$2 \times 4 = \quad \_\_\_\_ + \_\_\_\_$

$2 \times 4 = \quad \_\_\_\_$

$2 \times 4 = \quad (\_\_\_\_ + \_\_\_\_) \times 4$

$2 \times 4 = (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$2 \times 4 = \quad \_\_\_\_ + \_\_\_\_$

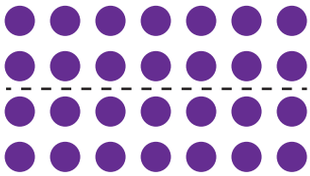
$2 \times 4 = \quad \_\_\_\_$

Name _____

## Apply and Grow: Practice

Use the Distributive Property to find the product.

**2.**



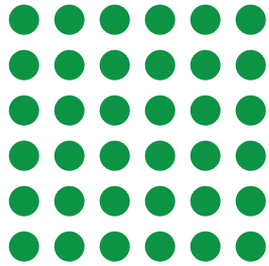
$4 \times 7 = (\_\_\_\_ + \_\_\_\_) \times 7$

$4 \times 7 = (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$4 \times 7 = \_\_\_\_ + \_\_\_\_$

$4 \times 7 = \_\_\_\_$

**3.**



$6 \times 6 = 6 \times (\_\_\_\_ + \_\_\_\_)$

$6 \times 6 = (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$6 \times 6 = \_\_\_\_ + \_\_\_\_$

$6 \times 6 = \_\_\_\_$

Use the Distributive Property to fill in the blanks.

**4.** $7 \times 4 = 7 \times (\_\_\_\_ + 2)$

$= (7 \times \_\_\_\_) + (\_\_\_\_ \times 2)$

$= \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

**5.** $3 \times 6 = (\_\_\_\_ + \_\_\_\_) \times 6$

$= (\_\_\_\_ \times 6) + (\_\_\_\_ \times 6)$

$= \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

**6.** **Which One Doesn't Belong?** Which expression *cannot* be used to find $3 \times 7$?

$3 \times (5 + 2)$ $3 \times (7 + 1)$

$(2 + 1) \times 7$ $(1 + 2) \times 7$

**7.** **Writing** Explain how you can use the Distributive Property to find $5 \times 12$.

## Think and Grow: Modeling Real Life

A scooter rental center has 6 rows of scooters. There are 9 scooters in each row. Can 50 people each rent a scooter at the same time?

Multiplication expression:

Distributive Property:

50 people _____ each rent a scooter at the same time.

## Show and Grow

**8.** A roller-coaster train has 9 rows of seats. There are 4 seats in each row. Can a group of 38 students ride the roller coaster at the same time?

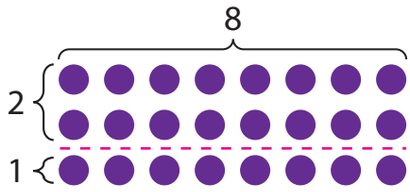
**9.** **DIG DEEPER!** A joke book has 20 pages. There are 5 jokes on each page. You read 16 jokes. How many jokes do you have left to read?

Name _____

## Homework & Practice 2.5

**Learning Target:** Use the Distributive Property to multiply.

**Example** Use the Distributive Property to find $3 \times 8$.




$3 \times 8 = (2 + 1) \times 8$

$3 \times 8 = (2 \times 8) + (1 \times 8)$

$3 \times 8 = \underline{16} + \underline{8}$

$3 \times 8 = \underline{24}$

Use the Distributive Property to find the product.

**1.**

$4 \times 4 =$ $\quad 4 \times (\_\_\_ + \_\_\_)$

$4 \times 4 = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_)$

$4 \times 4 =$ $\quad \_\_\_ + \_\_\_$

$4 \times 4 =$ $\quad \_\_\_$

**2.**

$3 \times 9 = (\_\_\_ + \_\_\_) \times 9$

$3 \times 9 = (\_\_\_ \times \_\_\_) + (\_\_\_ \times \_\_\_)$

$3 \times 9 =$ $\quad \_\_\_ + \_\_\_$

$3 \times 9 =$ $\quad \_\_\_$

Use the Distributive Property to fill in the blanks.

**3.** $8 \times 6 = \_\_\_ \times (5 + \_\_\_)$

$= (8 \times 5) + (\_\_\_ \times \_\_\_)$

$= \_\_\_ + \_\_\_$

$= \_\_\_$

**4.** $7 \times 7 = 7 \times (5 + \_\_\_)$

$= (\_\_\_ \times 5) + (7 \times \_\_\_)$

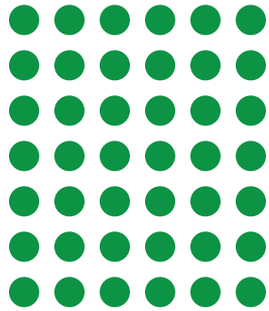
$= \_\_\_ + \_\_\_$

$= \_\_\_$

**5.** MP **Structure** Which ways can you break apart the array?

$(7 \times 5) + (7 \times 1)$ $(7 \times 2) + (7 \times 3)$

$(5 \times 4) + (2 \times 2)$ $(5 \times 6) + (2 \times 6)$



**6.** MP **Logic** Your friend breaks apart an array into a $4 \times 5$ array and a $4 \times 2$ array. Draw a picture to show the original array.

**7.** DIG DEEPER! Is the equation true? Does it demonstrate the Distributive Property? Explain.

$$4 \times 8 \stackrel{?}{=} (4 \times 5) + (4 \times 2) + (4 \times 1)$$

**8.** **Modeling Real Life** Newton sleeps 9 hours each night. How many hours does he sleep in 1 week?

**9.** **Modeling Real Life** There are 3 lanes of cars sitting at a red light. Each lane has 6 cars in it. How many cars are sitting at the red light?

## Review & Refresh

**10.** Some kids are at an arcade. Seventeen of them leave. There are 39 left. How many kids were at the arcade to start?

Name _____

# Problem Solving: Multiplication 2.6

**Learning Target:** Use the problem-solving plan to solve word problems.

**Success Criteria:**

- I can understand a problem.
- I can make a plan to solve.
- I can solve a problem.

## Explore and Grow

Use any strategy to solve.

You, Newton, and Descartes each have 4 marbles. How many marbles are there in all?

There are _____ marbles in all.

MP **Repeated Reasoning** Explain to your partner how you solved the problem.

## Think and Grow: Using the Problem-Solving Plan

**Example** A bookshelf has 5 shelves. There are 8 comic books on each shelf. You take 3 of them to read. How many comic books are left on the shelves?

### Understand the Problem

What do you know?

- There are _____ shelves.
- There are _____ comic books on each shelf.
- You take _____ comic books to read.

What do you need to find?

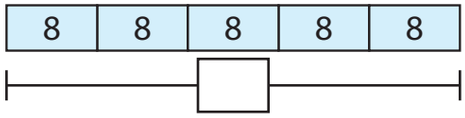
- You need to find how many _____ are left on the shelves after you take _____ of them.

### Make a Plan

How will you solve?

- Multiply _____ by _____ to find how many _____ are on the shelves.
- Then subtract _____ from the product.

### Solve




$5 \times 8 =$ _____

$8 + 8 + 8 + 8 + 8 =$ _____

_____ $- 3 =$ _____

There are _____ comic books left on the shelves.

## Show and Grow

**1.** A photo album has 10 pages. Each page holds 6 photos. You put 52 photos in the album. How many more photos can you put in the album?

Name _____

## Apply and Grow: Practice

**2.** Your classroom has 5 groups of desks with 5 desks in each group. There are 22 students in your class. What information do you know that would help you find how many empty desks there are?

**3.** You buy 2 boxes of cherry gelatin, 4 boxes of strawberry gelatin, and 3 boxes of orange gelatin. Each box contains 2 packets of gelatin. How many packets of gelatin do you buy?

**4.** A pack of gum has 5 pieces. You have 3 packs of gum and give 4 friends each 1 piece. How many pieces of gum do you have left?

## Think and Grow: Modeling Real Life

Descartes has four $10 bills, seven $5 bills, and one $2 bill.
How much money does he have in all?

Understand the problem:

Make a plan:

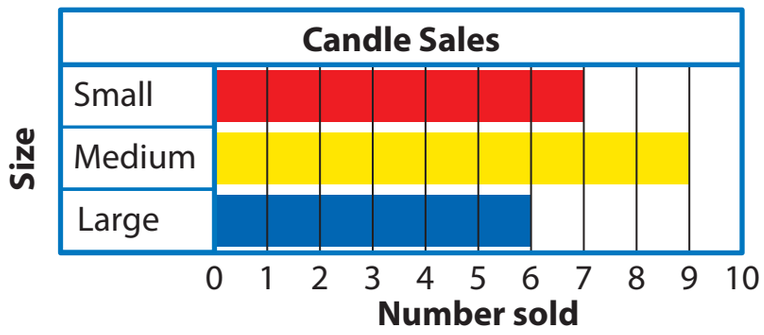
Solve:


Descartes has $_____.

## Show and Grow

**5.** A teacher has 10 boxes of dry-erase markers. Five boxes have 4 markers each, 2 boxes have 8 markers each, and 3 boxes have 10 markers each. How many dry-erase markers does the teacher have in all?

**6.** DIG DEEPER! You sell candles as a fundraiser. You earn $2 for each small candle you sell, $5 for each medium candle, and $10 for each large candle. You pay $8 to have the candles shipped. How much money do you raise?



Name _____

# Homework & Practice 2.6

**Learning Target:** Use the problem-solving plan to solve word problems.

**Example** You have 6 packages of muffins. There are 2 muffins in each package. You give 3 muffins away. How many muffins are left?

## Understand the Problem

**What do you know?**

- There are 6 packages of muffins.
- There are 2 muffins in each package.
- You give 3 muffins away.

**What do you need to find?**

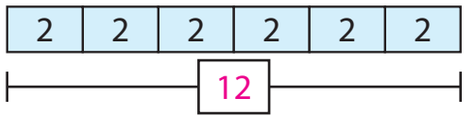
- You need to find how many muffins are left after you give 3 away.

## Make a Plan

**How will you solve?**

- Multiply 6 by 2 to find how many muffins there are in all.
- Then subtract 3 from the product.

## Solve




$2 + 2 + 2 + 2 + 2 + 2 = 12$

$6 \times 2 = 12$

$12 - 3 = 9$

There are 9 muffins left.

**1.** You buy 2 books and 3 magazines. Each book costs \$8 and each magazine costs \$2. How much money do you spend in all?

**2.** In a game, teams earn 10 points for each correct answer and lose 5 points for each incorrect answer. Your team answers 7 questions correctly and 3 questions incorrectly. How many points does your team have?

**3.** An origami cube requires 3 pieces of orange paper, 2 pieces of yellow paper, and 1 piece of blue paper. You make 5 cubes. How many pieces of paper do you need?

**4.** **Writing** Write and solve your own word problem that involves multiplication.

**5.** **Modeling Real Life** A group of students orders 6 small, 5 medium, and 3 large smoothies. The students pay with five $10 bills. How much change do they receive?

| Smoothie Prices | |
|---|---|
| Small | $2 |
| Medium | $4 |
| Large | $5 |

## Review & Refresh

Find the sum.

**6.**
$$\begin{array}{r} 490 \\ +\ 137 \\ \hline \end{array}$$

**7.**
$$\begin{array}{r} 625 \\ +\ 297 \\ \hline \end{array}$$

**8.**
$$\begin{array}{r} 386 \\ +\ 364 \\ \hline \end{array}$$

Name _____

# Performance Task 2

**1.** Three students make a model of our solar system.

**a.** Student A buys foam spheres to make the Sun and the planets. He pays with a $10 bill. What is his change?

| Item | Cost |
|---|---|
| Foam sphere | $1 |
| Wooden rod | $1 |
| Bottle of paint | $2 |
| Paintbrush | $1 |

**b.** Student B buys wooden rods to attach each planet to the sun. She pays with two $5 bills. What is her change?

**c.** Student C spends $13 on 3 paintbrushes and some bottles of paint. How many bottles of paint does Student C buy?

**d.** What is the total cost of the project? If the 3 students divide the cost equally, how much would they each spend?

# Three in a Row: Multiplication

**Directions:**

1. Players take turns.
2. On your turn, spin both spinners. Multiply the two numbers and cover the product.
3. The first player to get three counters in a row, horizontally, vertically, or diagonally, wins!


## Game A

| | | |
|---|---|---|
| 10 | 4 | 2 |
| 6 | 5 | 20 |
| 8 | 50 | 0 |

## Game B

| | | |
|---|---|---|
| 3 | 40 | 50 |
| 1 | 0 | 30 |
| 15 | 25 | 10 |

Name _____

# Chapter Practice 2

## 2.1 Multiply by 2

Find the product.

**1.** $\begin{array}{r} 7 \\ \times\ 2 \\ \hline \end{array}$

**2.** $\begin{array}{r} 3 \\ \times\ 2 \\ \hline \end{array}$

**3.** $\begin{array}{r} 2 \\ \times\ 2 \\ \hline \end{array}$

**4.** $\begin{array}{r} 2 \\ \times\ 9 \\ \hline \end{array}$

Find the missing factor.

**5.** $2 \times \_\_\_\_ = 2$

**6.** $2 \times \_\_\_\_ = 20$

**7.** $\_\_\_\_ \times 4 = 8$

## 2.2 Multiply by 5

Find the product.

**8.** $\begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}$

**9.** $\begin{array}{r} 5 \\ \times\ 10 \\ \hline \end{array}$

**10.** $\begin{array}{r} 8 \\ \times\ 5 \\ \hline \end{array}$

**11.** $\begin{array}{r} 5 \\ \times\ 2 \\ \hline \end{array}$

**12.** MP **Number Sense** Lightning strikes our planet 6 times every second. How many lightning strikes occur in 5 seconds?

## 2.3 Multiply by 10

Find the product.

**13.** $\begin{array}{r} 10 \\ \times\ 8 \\ \hline \end{array}$

**14.** $\begin{array}{r} 10 \\ \times\ 10 \\ \hline \end{array}$

**15.** $\begin{array}{r} 10 \\ \times\ 4 \\ \hline \end{array}$

**16.** $\begin{array}{r} 10 \\ \times\ 7 \\ \hline \end{array}$

## 2.4 Multiply by 0 and 1

Find the product.

**17.** $\begin{array}{r} 1 \\ \times\ 6 \\ \hline \end{array}$

**18.** $\begin{array}{r} 0 \\ \times\ 3 \\ \hline \end{array}$

**19.** $\begin{array}{r} 1 \\ \times\ 0 \\ \hline \end{array}$

**20.** $\begin{array}{r} 4 \\ \times\ 1 \\ \hline \end{array}$

Compare.

**21.** $0 \times 10 \bigcirc 9 \times 0$

**22.** $2 \times 1 \bigcirc 5 \times 0$

**23.** $7 \times 1 \bigcirc 1 \times 8$

## 2.5 Use the Distributive Property

Use the Distributive Property to fill in the blanks.

**24.** $7 \times 3 = (\_\_\_\_ + 2) \times 3$

$= (\_\_\_\_ \times 3) + (2 \times \_\_\_\_)$

$= \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

**25.** $6 \times 6 = 6 \times (\_\_\_\_ + \_\_\_\_)$

$= (6 \times \_\_\_\_) + (6 \times \_\_\_\_)$

$= \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

## 2.6 Problem Solving: Multiplication

**26.** You place your trading card collection into an album that has 5 pages. You put 9 cards on each page. Some of the cards are the same, so you give 3 cards to a friend. How many trading cards do you have left?

**27.** **Modeling Real Life** In a game, you start with ten \$1 bills, five \$5 bills, and two \$10 bills. How much money do you start with in all?