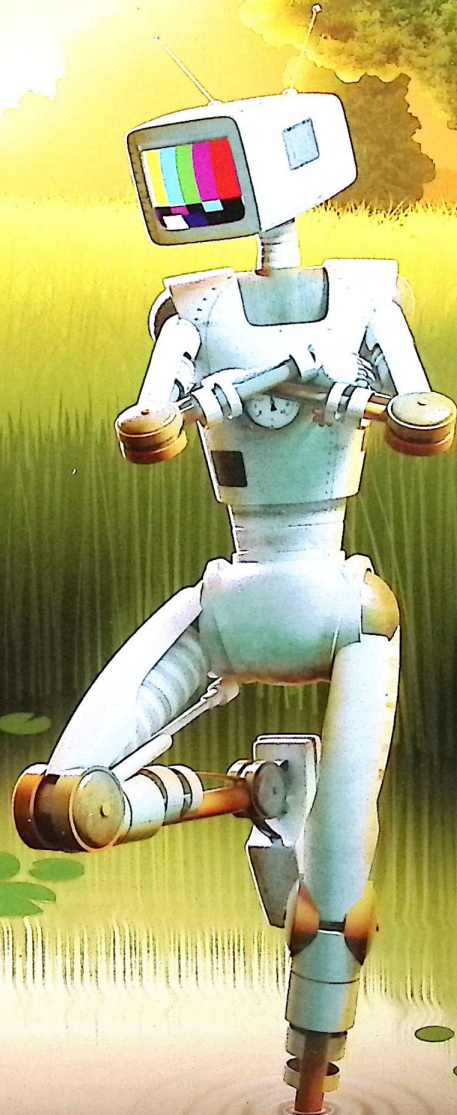


GRADE 5 VOLUME 2



**enVision** Mathematics

**SAVVAS**



Hi, we're here to help you.  
Let's have a great year!





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Digital Resources at SavvasRealize.com



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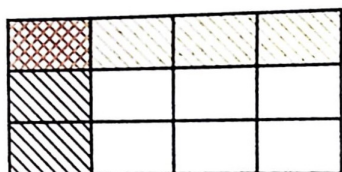
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- 7 Use Equivalent Fractions to Add and Subtract Fractions
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- 16 Geometric Measurement: Classify Two-Dimensional Figures

And remember  
your Interactive Student  
Edition is available at  
SavvasRealize.com!





This shows  
how to multiply  
two fractions.

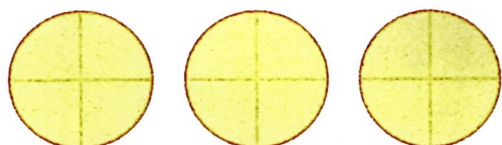


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This shows how to divide a whole number by a unit fraction using a model.



$$3 \div \frac{1}{4} = 3 \times \frac{4}{1} = 12$$

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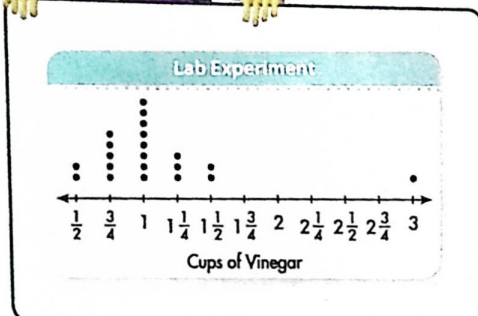
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This shows how  
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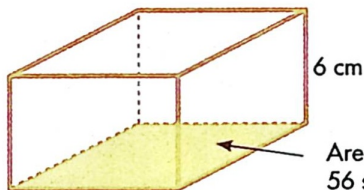
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This shows one way to find the volume of a rectangular prism.



$$\begin{aligned} V &= B \times h \\ V &= 56 \times 6 \\ V &= 336 \text{ cubic cm} \end{aligned}$$

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This shows how  
customary units of length  
are related.



1 foot (ft) = 12 inches (in.)  
1 yard (yd) = 3 ft = 36 in.  
1 mile (mi) = 1,760 yd = 5,280 ft

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This shows how to evaluate an expression using the order of operations.

$$12 \div 4 + (9 - 2) \times (3 + 5)$$

↓ ↓ ↓ ↓ ↓

$$12 \div 4 + 7 \times 8$$

↓ ↓ ↓

$$3 + 56$$

↓

$$59$$

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This graph shows ordered pairs on a coordinate grid.



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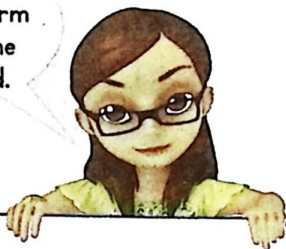
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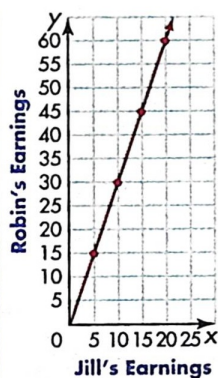
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This shows how ordered pairs form a pattern on the coordinate grid.



Jill's Earnings (x)	Robin's Earnings (y)
0	0
5	15
10	30
15	45
20	60



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These are  
different types of  
quadrilaterals.



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# Apply Understanding of Multiplication to Multiply Fractions

**Essential Questions:** What does it mean to multiply whole numbers and fractions? How can multiplication with whole numbers and fractions be shown using models and symbols?

## Digital Resources



Physical changes are reversible.

You can change a substance so that it looks and feels different, but it's still the same substance. The molecules haven't changed.

A substance can act differently because of a physical change. Here's a project about kitchen science.

## enVision STEM Project: Kitchen Chemistry

**Do Research** Use the Internet or other sources to learn about physical changes to substances. Look for examples of physical changes that occur in the kitchen. When you condense, freeze, melt, vaporize, or whip air into a substance, you are making physical changes to that substance.

**Journal: Write a Report** Include what you found. Also in your report:

- Give examples of foods that are commonly condensed, frozen, melted, vaporized, or whipped.
- Write your favorite recipe that involves making physical changes to the food.
- Make up and solve multiplication problems with fractions and mixed numbers.



# Review What You Know

## **A-Z Vocabulary**

Choose the best term from the box.  
Write it on the blank.

- benchmark fractions
- mixed number
- equivalent fractions
- multiple
- factor

1. To estimate the sum of two or more fractions, replace the addends with \_\_\_\_\_.
2. You can find \_\_\_\_\_ by multiplying both the numerator and the denominator of a fraction by the same nonzero number.
3. A \_\_\_\_\_ of a number is a product of the number and any nonzero whole number.

## **Multiply and Divide**

Find each product or quotient.

4.  $108 \times 2$

5.  $270 \div 30$

6.  $243 \times 20$

7.  $288 \div 24$

8.  $456 \times 11$

9.  $432 \div 24$

## **Fraction Sums and Differences**

Find each answer.

10.  $\frac{5}{9} + \frac{8}{9}$

11.  $2\frac{2}{3} + 5\frac{1}{2}$

12.  $\frac{11}{12} - \frac{2}{3}$

13.  $6\frac{7}{10} - 2\frac{3}{5}$

14. At the library, Herb spent  $\frac{1}{6}$  hour looking for a book,  $\frac{1}{4}$  hour reading, and  $\frac{1}{2}$  hour doing research on the computer. How many hours did Herb spend at the library?

## **Common Denominators**

15. Explain how you can find a common denominator for  $\frac{3}{5}$  and  $\frac{5}{8}$ .



PROJECT  
8A

What story does your quilt tell?

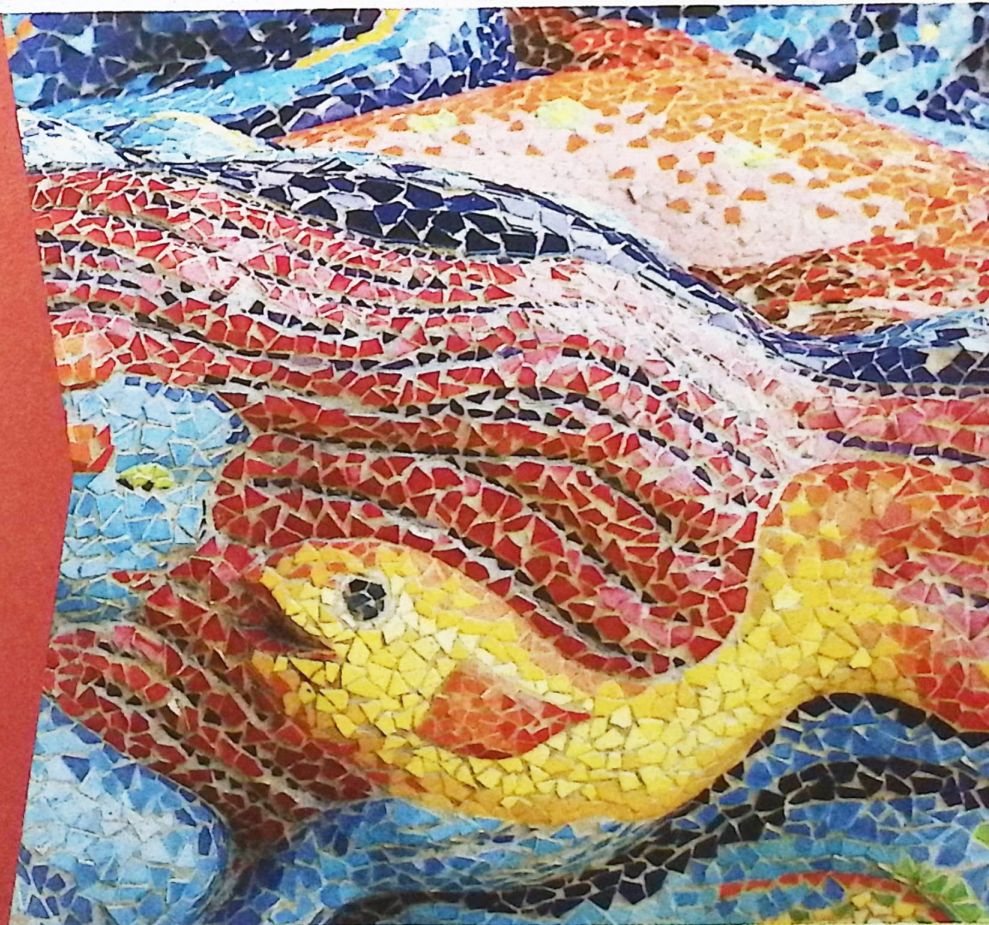
**Project:** Design a Quilt



PROJECT  
8B

Can you make art with just sticky notes?

**Project:** Create a Mosaic with Sticky Notes

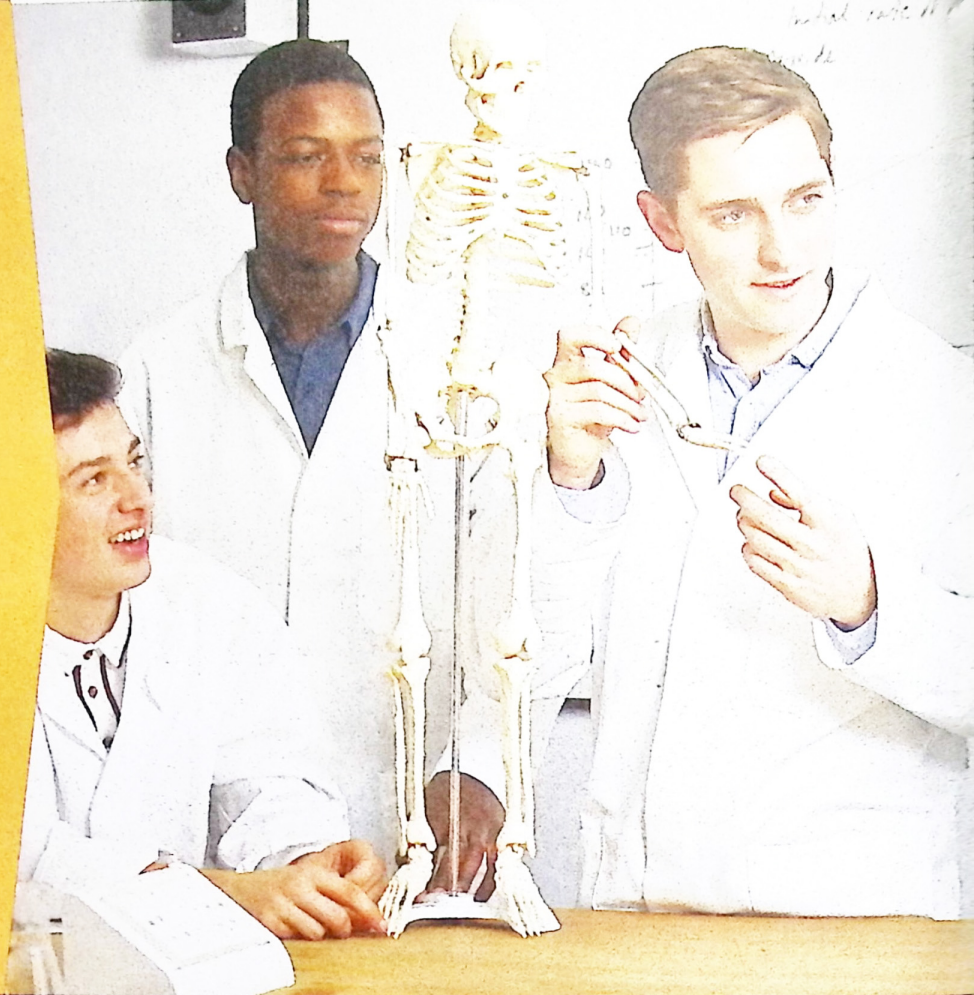




PROJECT  
8C

**How much calcium does your body need?**

**Project:** Analyze Menus for Calcium-Rich Foods



PROJECT  
8D

**Have you ever been in a cave?**

**Project:** Create a Scale Model of a Cave





Name \_\_\_\_\_



Activity

## Solve & Share

Sasha walked  $\frac{1}{2}$  mile every day for 5 days. How far did she walk? Draw a picture or use any model to help you solve the problem.

**Model with Math**  
What are some different ways you can model multiplication problems?



## Lesson 8-1

### Multiply a Fraction by a Whole Number

#### I can ...

multiply a fraction by a whole number.

**I can also** model with math to solve problems.

**Look Back!** How does using a model help you multiply a fraction by a whole number?



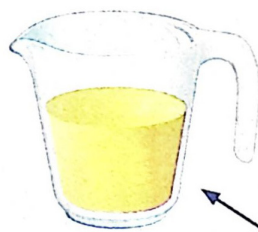


## What Are Some Ways to Multiply a Fraction by a Whole Number?

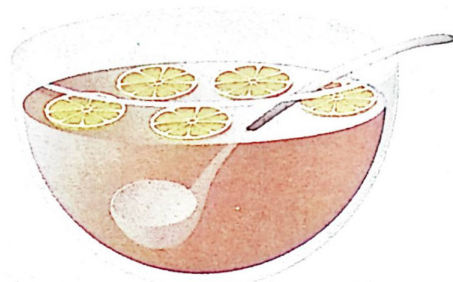
Joann wants to make 6 batches of fruit punch. How many cups of orange juice does she need?



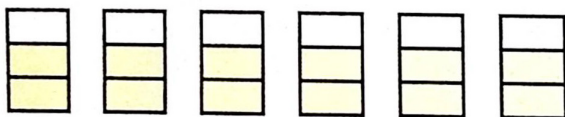
I need to find  $6 \times \frac{2}{3}$ .



$\frac{2}{3}$  cup of orange juice for each batch



B One way to represent  $6 \times \frac{2}{3}$  is to use repeated addition.



$$\begin{aligned} 6 \times \frac{2}{3} &= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} \\ &= \frac{6 \times 2}{3} \\ &= \frac{12}{3} \end{aligned}$$

$$\text{So, } 6 \times \frac{2}{3} = \frac{12}{3} = 4.$$

C

You can think of  $\frac{2}{3}$  as 2 times  $\frac{1}{3}$ .

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

$$\text{So, } 6 \times \frac{2}{3} = 6 \times \left( 2 \times \frac{1}{3} \right).$$

Use the Associative Property.

$$\begin{aligned} 6 \times \left( 2 \times \frac{1}{3} \right) &= (6 \times 2) \times \frac{1}{3} \\ &= 12 \times \frac{1}{3} \\ &= \frac{12}{3} = 4 \end{aligned}$$

Joann needs 4 cups of orange juice to make 6 batches of punch.



**Convince Me!** Use Structure Find  $10 \times \frac{3}{5}$ . Use repeated addition to check your answer. Show all of your work.

# ☆ Guided Practice

## Do You Understand?

1. Explain why  $8 \times \frac{3}{4}$  is the same as adding  $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$ .

2. Find  $2 \times \frac{3}{5}$ . Shade the model to help solve.

--	--	--	--	--

--	--	--	--	--

## Do You Know How?

3. Find  $3 \times \frac{2}{3}$  using repeated addition.

4. Find  $6 \times \frac{3}{4}$  using the Associative Property.

# ☆ Independent Practice ☆

**Leveled Practice** In 5-7, complete each equation to find the product.

$$5. 6 \times \frac{3}{4} = \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} = \frac{\square \times \square}{\square} = \frac{18}{4} = \square$$

$$6. 16 \times \frac{3}{8} = 16 \times \square \times \frac{1}{8} = \frac{\square \times 1}{8} = \frac{\square}{\square} = \square$$

$$7. 500 \times \frac{2}{5} = \square \times 2 \times \frac{\square}{5} = \frac{\square \times 1}{5} = \frac{1,000}{\square} = \square$$

In 8-15, find each product. Use models to help, if necessary.

8.  $35 \times \frac{2}{5}$

9.  $7 \times \frac{5}{12}$

10.  $9 \times \frac{2}{3}$

11.  $300 \times \frac{1}{2}$

12.  $64 \times \frac{3}{8}$

13.  $900 \times \frac{2}{3}$

14.  $84 \times \frac{1}{4}$

15.  $42 \times \frac{2}{7}$



# Problem Solving

**16. Higher Order Thinking** Explain how you would find  $36 \times \frac{3}{4}$  mentally.

**17.** Each lap around a track is  $\frac{5}{6}$  kilometer. Samantha drove around the track 24 times. How far did Samantha drive?

**18.** Drake is making capes. He uses  $\frac{1}{3}$  yard of fabric for each cape he makes. What is the total amount of fabric Drake needs to make 96 capes?

**19.** Bradley is making fruit salad. For each bowl of fruit salad, he needs  $\frac{3}{4}$  cup of grapes. How many cups of grapes will he use if he makes 24 bowls of fruit salad?

**20. Construct Arguments** Do you think the difference  $1.4 - 0.95$  is less than 1 or greater than 1? Explain.

**21.** Write a multiplication expression that shows  $10^6$ .

**22.** The table shows the number of miles each person ran this week. Who ran more miles by the end of the week? How many more?

	Monday	Wednesday	Saturday
Pat	2.75 mi	3 mi	2.5 mi
Toby	2 mi	2.25 mi	3.5 mi

## Assessment Practice

**23.** Select all equations that would be made true with the fraction  $\frac{3}{8}$ .

- ☐  $96 \times \square = 36$   
☐  $38 \times \square = 14$   
☐  $16 \times \square = 6$   
☐  $56 \times \square = 21$

**24.** Select all equations that would be made true with the number 56.

- ☐  $\square \times \frac{1}{2} = 28$   
☐  $\square \times \frac{2}{7} = 16$   
☐  $\square \times \frac{8}{9} = 49$   
☐  $\square \times \frac{1}{4} = 14$

Name \_\_\_\_\_



Activity

## Solve & Share

Brandon has 6 eggs. He needs  $\frac{2}{3}$  of the eggs to make an omelet. How many eggs does he need?

Model with Math  
Would a drawing help you  
picture the situation?



## Lesson 8-2

### Multiply a Whole Number by a Fraction

#### I can ...

multiply a whole number by a fraction.

**I can also** model with math to solve problems.

**Look Back!** Should your answer be less than or greater than 6? How do you know?







# How Can You Multiply a Whole Number by a Fraction?

A

Claudia has 8 yards of fabric. She needs  $\frac{3}{4}$  of the fabric to make a banner. How many yards of fabric does she need?



1 yd 1 yd 1 yd 1 yd 1 yd 1 yd 1 yd 1 yd

You can use models to represent the problem.

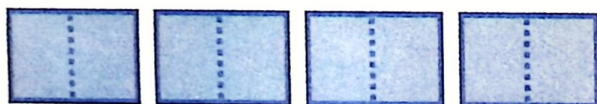


You need to find  $\frac{3}{4}$  of 8.

B

## Step 1

Since you are finding  $\frac{3}{4}$  of 8, divide the model into 4 equal parts.



$\frac{1}{4}$  of 8

$\frac{1}{4}$  of 8

$\frac{1}{4}$  of 8

$\frac{1}{4}$  of 8

$$\frac{1}{4} \text{ of } 8 = \frac{1}{4} \times 8 = 2$$

C

## Step 2

Since you are finding  $\frac{3}{4}$  of 8, take 3 of those parts to make 6.



$$\begin{aligned} \frac{3}{4} \times 8 &= \left(3 \times \frac{1}{4}\right) \times 8 = 3 \times \left(\frac{1}{4} \times 8\right) \\ &= 3 \times 2 = 6 \end{aligned}$$

$$\text{So, } \frac{3}{4} \times 8 = 6.$$

Claudia needs 6 yards of fabric to make a banner.

## Convince Me! Model with Math

Here is how Lydia found the product  $\frac{4}{5} \times 10$ .

$$\begin{aligned} \frac{4}{5} \times 10 &= 4 \times \frac{1}{5} \times 10 \\ &= 4 \times \frac{10}{5} \\ &= 4 \times 2 = 8 \end{aligned}$$

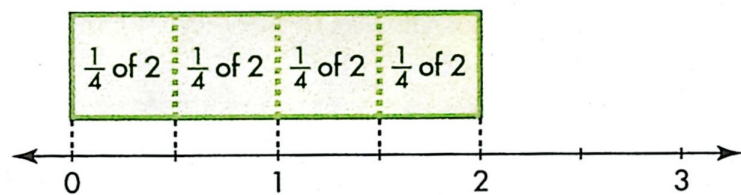


Use the model at the right to show that Lydia's answer is correct.

## Another Example

Find  $\frac{3}{4} \times 2$ .

Divide 2 into 4 equal parts.



Each part is  $\frac{1}{2}$ . So 3 parts make  $\frac{3}{2}$ .

So,  $\frac{3}{4} \times 2 = \frac{3}{2}$ .

Think three-fourths  
of 2 wholes.



## ☆ Guided Practice

### Do You Understand?

1. Explain why the product of  $4 \times \frac{2}{3}$  is the same as the product of  $\frac{2}{3} \times 4$ .
2. In the problem at the top of page 338, what multiplication equation could be used to find how many yards of fabric Claudia did not use?

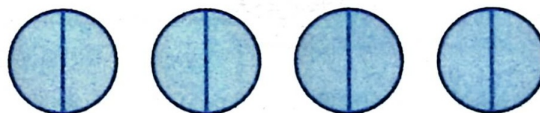
### Do You Know How?

In **3** and **4**, use the model to find each product.

3.  $\frac{2}{3} \times 6$



4.  $\frac{3}{8} \times 4$



## ☆ Independent Practice ☆

In **5-7**, find each product. Draw models to help.

5.  $\frac{2}{3} \times 15$

6.  $\frac{11}{12} \times 6$

7.  $\frac{5}{8} \times 16$



# Problem Solving

8. **Construct Arguments** Janice said that when you multiply a fraction less than 1 by a nonzero whole number, the product is always less than the whole number. Do you agree? Explain.

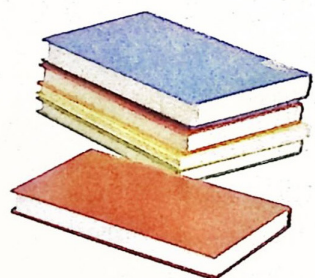
9. **enVision® STEM** A scientist wants to find out how the properties of water change when salt is added to it. For every cup of water she has, she replaces  $\frac{1}{8}$  of it with salt. If she has 24 cups of water, how many cups will she replace with salt?

10. Shanna attends school for 1 week longer than  $\frac{3}{4}$  of the year. How many weeks in a year does Shanna attend school?



11. **Higher Order Thinking** Gina has 48 stickers.  $\frac{3}{8}$  of the stickers have pictures of flowers.  $\frac{1}{8}$  of the stickers have pictures of plants. The rest of the stickers have pictures of people. How many stickers have pictures of people? Explain how you found your answer.

12. Two paperback books cost a total of \$10. How much change will Stacy get if she buys two hardcover books and two paperback books and gives the clerk three \$20 bills?



Sale: Hardcover books,  
\$18.25 each

## Assessment Practice

13. Select each expression that has a product of 12.

- ☐  $\frac{3}{4} \times 16$   
☐  $\frac{5}{12} \times 12$   
☐  $\frac{2}{5} \times 30$   
☐  $\frac{2}{3} \times 15$

14. Select each equation that would be made true with the number 4.

- ☐  $\frac{2}{3} \times \square = \frac{8}{3}$   
☐  $\frac{5}{6} \times \square = 10$   
☐  $\frac{1}{12} \times \square = \frac{1}{3}$   
☐  $\frac{3}{8} \times \square = \frac{3}{2}$

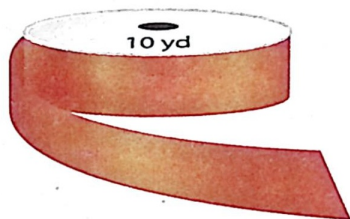
Name \_\_\_\_\_



Activity

## Solve & Share

Julie has 10 yards of ribbon. She divides the ribbon into 3 equal pieces and uses 2 of the pieces on gifts. How much ribbon does she use? *Solve this problem any way you choose.*



**Model with Math** You can use words, pictures, and equations to solve the problem. *Show your work in the space above!*

## Lesson 8-3

### Multiply Fractions and Whole Numbers

#### I can ...

multiply fractions and whole numbers.

**I can also** model with math to solve problems.

**Look Back!** Should the answer be less than or greater than 5? How do you know?



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