**1**

One slice of this pizza costs 50¢.

How much does the whole pizza cost?
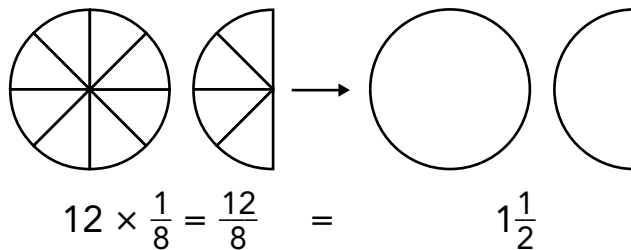
ANSWER: $4

COMMENTS & EXTENSIONS: The key to solving this problem is to determine what part of the pizza is represented by the slice shown ($\frac{1}{8}$). Similar problems can be posed with other fractions of the pizza—for example, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, etc.

If a square pizza with sides 5 inches long costs $5, how much does a square pizza with sides 10 inches long cost? (Hint: The answer is not $10.)

Name ___*Answer Key*___

Try This

- Use Fraction Circles to model the product.

- Use the fewest number of Fraction Circle pieces to help you write the product in simplest form whenever possible.

$$12 \times \frac{1}{8} = \frac{12}{8} \quad = \quad 1\frac{1}{2}$$

1. $7 \times \frac{1}{10} =$ ___$\frac{7}{10}$___

2. $3 \times \frac{1}{6} =$ ___$\frac{3}{6}$___ $=$ ___$\frac{1}{2}$___

3. $8 \times \frac{1}{5} =$ ___$\frac{8}{5}$___ $=$ ___$1\frac{3}{5}$___

4. $8 \times \frac{1}{6} =$ ___$\frac{8}{6}$___ $=$ ___$1\frac{1}{3}$___

5. $14 \times \frac{1}{10} =$ ___$\frac{14}{10}$___ $=$ ___$1\frac{2}{5}$___

6. $15 \times \frac{1}{12} =$ ___$\frac{15}{12}$___ $=$ ___$1\frac{1}{4}$___

For Problems 7–9, write the fraction as the product of a whole number and a unit fraction.

7. $\frac{4}{5} =$ ___4___ $\times$ ___$\frac{1}{5}$___

8. $\frac{13}{8} =$ ___13___ $\times$ ___$\frac{1}{8}$___

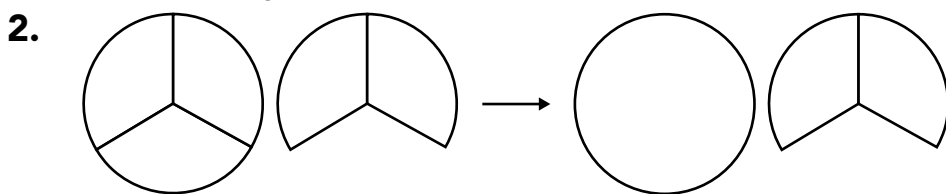**9.** $\frac{12}{12} =$ ___12___ $\times$ ___$\frac{1}{12}$___

Challenge

If a is a whole number and $\frac{1}{b}$ is a unit fraction, how do you express the product of $a \times \frac{1}{b}$?

___$\frac{a}{b}$___

Name **Answer Key**

Use Fraction Circles to build the model. Fill in the blanks in the number sentence. Write the product as a mixed number in simplest form.

1.

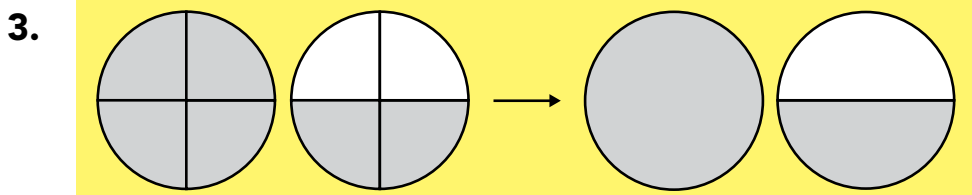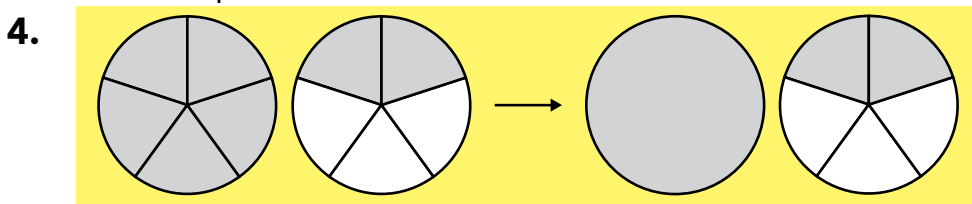$$8 \times \frac{1}{6} = \underline{\frac{8}{6}} = \underline{1\frac{1}{3}}$$

2.
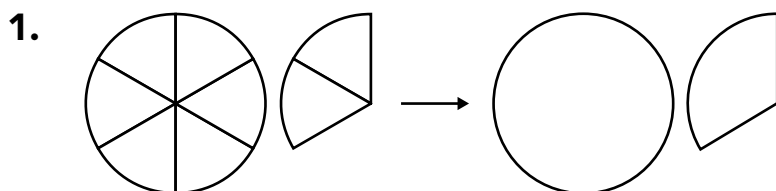
$$\underline{5} \times \underline{\frac{1}{3}} = \underline{\frac{5}{3}} = \underline{1\frac{2}{3}}$$

Use Fraction Circles to model the problem. Sketch the model. Write the product as a fraction and as a mixed number in simplest form.

3.

$$6 \times \frac{1}{4} = \underline{\frac{6}{4}} = \underline{1\frac{1}{2}}$$

4.

$$7 \times \frac{1}{5} = \underline{\frac{7}{5}} = \underline{1\frac{2}{5}}$$

Write the product as a mixed number in simplest form.

5. $9 \times \frac{1}{8} = \underline{\frac{9}{8}} = \underline{1\frac{1}{8}}$

6. $7 \times \frac{1}{3} = \underline{\frac{7}{3}} = \underline{2\frac{1}{3}}$

7. $9 \times \frac{1}{6} = \underline{\frac{9}{6}} = \underline{1\frac{1}{2}}$

8. $11 \times \frac{1}{10} = \underline{\frac{11}{10}} = \underline{1\frac{1}{10}}$

9. $4 \times \frac{1}{3} = \underline{\frac{4}{3}} = \underline{1\frac{1}{3}}$

10. $18 \times \frac{1}{12} = \underline{\frac{18}{12}} = \underline{1\frac{1}{2}}$

2

Mental Math!

a. A taxi charges 50¢ for $\frac{1}{7}$ of a mile. What would the cost for one mile be?

b. A different taxi charges $1 for the first mile and $1 for every $\frac{1}{7}$ mile after that. How much for a two-mile ride?

ANSWER: a. $3.50; **b.** $8

**COMMENTS & EXTENSIONS:** The key to Part **a.** is that seven–sevenths of a mile make one mile.

If taxis are common in the community, ask students to gather data on taxicab rates and figure out the cost (and a range of costs) of a one-mile trip.

When is it cheaper to take the taxi from Part **a.** over the taxi from Part **b.**?

Name ___*Answer Key*___

Try This

- Use Fraction Towers and Fraction Number Line 4 to model problems 1–6.

- Write the product in simplest form.

- Try to solve problems 7–8 without building models.

| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |

0   1 $\frac{6}{5}$
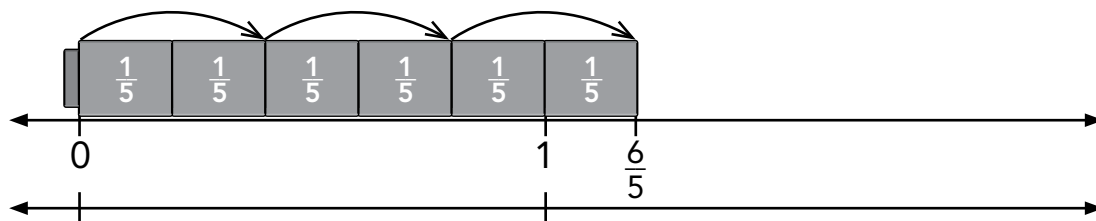
$$3 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$$

$$3 \times \frac{2}{5} = 6 \times \frac{1}{5} = \frac{6}{5} = 1\frac{1}{5}$$

1. $4 \times \frac{1}{6} = \frac{4}{6} = \underline{\frac{2}{3}}$

2. $5 \times \frac{1}{3} = \underline{\frac{5}{3}} = 1\underline{\frac{2}{3}}$

3. $6 \times \frac{1}{4} = \frac{6}{4} = 1\frac{2}{4} = 1\underline{\frac{1}{2}}$

4. $3 \times \frac{3}{10} = \underline{\frac{9}{10}}$

5. $2 \times \frac{5}{12} = \underline{\frac{10}{12}} = \underline{\frac{5}{6}}$

6. $5 \times \frac{2}{10} = \underline{\frac{10}{10}} = \underline{1}$

7. $3 \times \frac{3}{8} = \frac{9}{8} = 1\underline{\frac{1}{8}}$

8. $4 \times \frac{2}{3} = \underline{\frac{8}{3}} = \underline{2\frac{2}{3}}$

Name ___*Answer Key*___

Use Fraction Towers and Fraction Number Line 4 to build the model. Fill in the blanks and write the product in simplest form.

1.
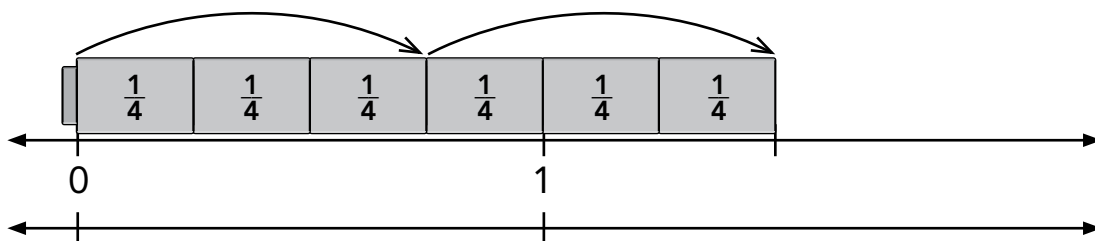
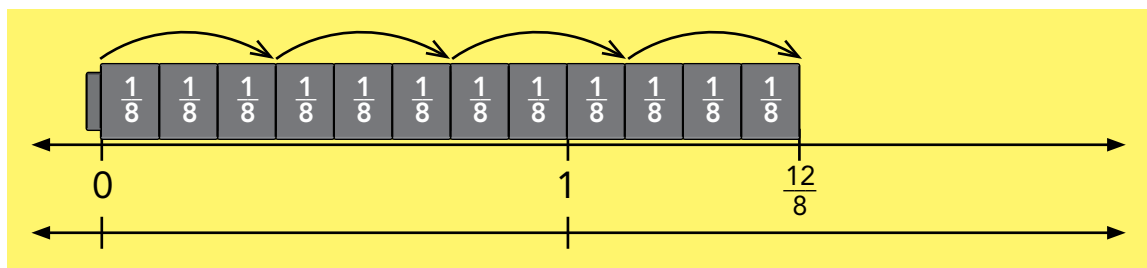$2 \times \dfrac{3}{4} = \boxed{6} \times \dfrac{1}{4} = \boxed{\dfrac{6}{4}} = \boxed{1\dfrac{2}{4}} = \boxed{1\dfrac{1}{2}}$

Use Fraction Towers and Fraction Number Line 4 to model the problem. Sketch your model. Fill in the blanks and write the product in simplest form.

2. $4 \times \dfrac{3}{8} = \boxed{12} \times \boxed{\dfrac{1}{8}} = \boxed{\dfrac{12}{8}} = \boxed{1\dfrac{4}{8}} = \boxed{1\dfrac{1}{2}}$

Write the product in simplest form.

3. $2 \times \dfrac{4}{10} = \boxed{\dfrac{8}{10}} = \boxed{\dfrac{4}{5}}$

4. $4 \times \dfrac{2}{5} = \boxed{\dfrac{8}{5}} = \boxed{1\dfrac{3}{5}}$

5. $2 \times \dfrac{2}{3} = \boxed{\dfrac{4}{3}} = \boxed{1\dfrac{1}{3}}$

6. $5 \times \dfrac{5}{12} = \boxed{\dfrac{25}{12}} = \boxed{2\dfrac{1}{12}}$

3

Jamie is half as old as his dad. His dad is 40.

    a. Will he always be half as old as his dad?

    b. Is there some time when Jamie will be one-third his father's age?

ANSWER: **a.** no; **b.** Not anymore, but when Jamie was age 10, Jamie's father was 30.

COMMENTS & EXTENSIONS: Trial-and-Success is a good approach here. What will Jamie's age be when his father is 42? Then try 45 and 50. What do you learn?

3 Multiple Stories

Name __*Answer Key*__

Try This

■ Write a number sentence for each problem.

■ Express the answer in simplest form.

■ Use Fraction Circles, Fraction Squares, or Fraction Towers, if needed.

1. Laurie needs 2 pieces of ribbon. Each piece needs to be $\frac{7}{8}$ inch long. How many inches of ribbon does Laurie need?

<u> 2 </u> × <u> $\frac{7}{8}$ </u> = <u> $\frac{14}{8}$ </u> = <u> $1\frac{6}{8}$ </u> = <u> $1\frac{3}{4}$ </u> inches

2. Josiah walked $\frac{7}{12}$ mile each day for 3 days. How far did Josiah walk?

$3 \times \frac{7}{12} = \frac{21}{12} = 1\frac{9}{12} = 1\frac{3}{4}$ miles

3. The length of one side of a square is $\frac{3}{10}$ meter. What is the perimeter of the square?

$4 \times \frac{3}{10} = \frac{12}{10} = 1\frac{2}{10} = 1\frac{1}{5}$ meters

4. The length of one side of an equilateral triangle is $\frac{5}{12}$ yard. What is the perimeter of the triangle?

$3 \times \frac{5}{12} = \frac{15}{12} = 1\frac{3}{12} = 1\frac{1}{4}$ yards

5. A park is on a rectangular plot of land that is 5 miles long and $\frac{3}{8}$ mile wide. What is the area of the park in square miles?

$5 \times \frac{3}{8} = \frac{15}{8} = 1\frac{7}{8}$ square miles

6. Selena needs to water 6 new plants in her garden. If she uses $\frac{4}{5}$ gallon of water on each plant, how much water will she use in all?

$6 \times \frac{4}{5} = \frac{24}{5} = 4\frac{4}{5}$ gallons

7. Lomas skated for $\frac{3}{4}$ hour each day for 5 days. How long did he skate?

$5 \times \frac{3}{4} = \frac{15}{4} = 3\frac{3}{4}$ hours

8. A serving of pudding is $\frac{2}{3}$ cup. If Margo made 12 servings for her friends, how much pudding did she make?

$12 \times \frac{2}{3} = \frac{24}{3} = 8$ cups

Multiple Stories

Name ___**Answer Key**___

Use Fraction Circles to model the story. Write a multiplication sentence for the story. Write the answer.

1. Martin will make $\frac{2}{3}$-cup servings of pears for 4 children. How many cups of pears does he need in all?
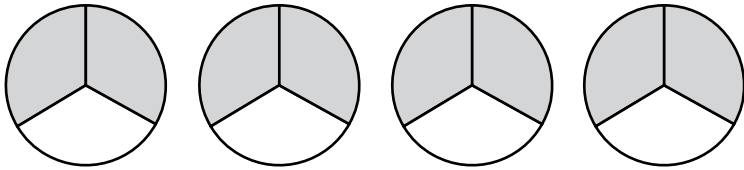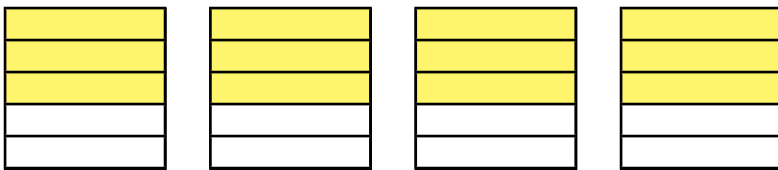

Multiplication Number Sentence: $4 \times \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$ _____

How many cups of pears does Martin need? $2\frac{2}{3}$ cups

Use Fraction Squares to model the story. Sketch your model. Write a multiplication sentence for the story. Write the answer.

2. Each lap around a track is $\frac{3}{5}$ of a kilometer. Molly walked around the track 4 times. How far did Molly walk?

Multiplication Number Sentence: $4 \times \frac{3}{5} = \frac{12}{5} = 2\frac{2}{5}$ _____

How many kilometers did Molly walk? $2\frac{2}{5}$ kilometers

Solve the problem. Write a number sentence to show your solution.

3. Mark filled a measuring cup with $\frac{3}{4}$ of a cup of juice 3 times. What was the total amount of juice he poured into the measuring cup?

$3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$ cups of juice

4. Roberto baked a cake. He needed seven $\frac{1}{4}$-cup servings of banana. How much banana did Robert need to bake the cake?

$7 \times \frac{1}{4} = \frac{7}{4} = 1\frac{3}{4}$ cups of banana

5. Carolina is making picture frames. Each frame uses $\frac{4}{5}$ of a yard of wood. What is the total length of wood that Carolina will need to make 4 frames?

$4 \times \frac{4}{5} = \frac{16}{5} = 3\frac{1}{5}$ yards of wood