Vocabulary

dividend The number that is to be divided in a division problem

equation An algebraic or numerical sentence that shows that two quantities are equal

fraction A number that names a part of a whole or a part of a group

Dear Family,

Throughout the next few weeks, our math class will be learning about dividing whole numbers by unit fractions and dividing unit fractions by whole numbers. We will also learn how a fraction represents division.

You can expect to see homework with real-world problems that involve division with fractions.

Here is a sample of how your child will be taught to use a model to divide by a fraction.

🔑 MODEL Draw a Diagram to Divide

Sue makes 3 waffles. She divides each waffle into fourths. How many $\frac{1}{4}$-waffle pieces does she have?

Divide. $3 \div \frac{1}{4}$

STEP 1
Draw 3 circles to represent the waffles. Draw lines to divide each circle into fourths.

STEP 2
To find $3 \div \frac{1}{4}$, multiply 3 by the number of fourths in each circle.

$3 \times 4 = 12$

Tips

Using Multiplication to Check

You can use multiplication to check the answer to a division problem involving fractions.

To check the answer in the sample, multiply $\frac{1}{4}$ by 12 and compare the product to the dividend, 3.

$12 \times \frac{1}{4} = \frac{12}{4}$, or 3
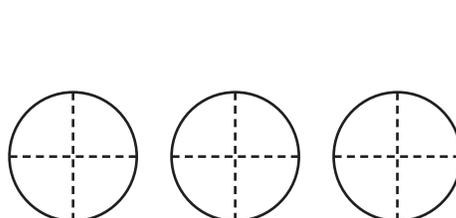
So, Sue has 12 one-fourth-waffle pieces.

Activity

Use real-world division situations such as sharing a pizza, pie, or orange equally to help your child practice division with fractions.

Carta para la casa

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos a dividir números enteros entre fracciones unitarias y fracciones unitarias entre números enteros. También aprenderemos de qué manera una fracción representa una división.

Llevaré a casa tareas para resolver problemas de la vida diaria que incluyan la división con fracciones.

Este es un ejemplo de cómo aprenderemos a usar un modelo para dividir entre una fracción.

Vocabulario

dividendo El número que se va a dividir en un problema de división

ecuación Una expresión algebraica o numérica que muestra que dos cantidades son iguales

fracción Un número que nombra parte de un todo o parte de un grupo

## 🔑 MODELO Dibujar un diagrama para dividir

Sue hace 3 wafles y los divide en porciones de 1/4. ¿Cuántas porciones tiene?

PASO 1

Dibuja 3 círculos para representar los wafles. Dibuja líneas que dividan cada círculo en cuartos.
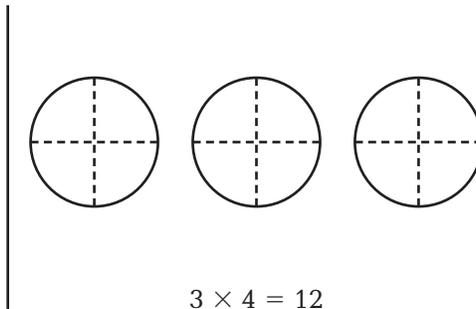
PASO 2

Para hallar $3 \div \frac{1}{4}$, multiplica 3 por el número de cuartos en cada círculo.

$3 \times 4 = 12$

Por tanto, Sue puede hacer 12 porciones de $\frac{1}{4}$.

Pistas

Usar la multiplicación para comprobar

Puedes usar la multiplicación para comprobar la respuesta de un problema de división con fracciones.

Para comprobar la respuesta del ejemplo, multiplica $\frac{1}{4}$ por 12 y compara el producto con el dividendo, 3.

$12 \times \frac{1}{4} = \frac{12}{4}$, o 3

Actividad

Use situaciones de la vida diaria que involucren divisiones, como compartir una pizza, un pay o una naranja en partes iguales para ayudar a su hijo o hija a practicar la división con fracciones.

Name _____

# Divide Fractions and Whole Numbers

Divide and check the quotient.

1.

1			1		
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
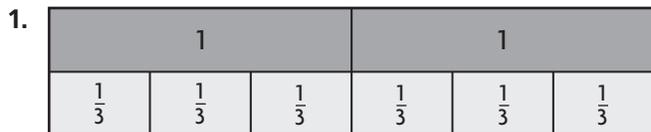
$2 \div \frac{1}{3} =$ **6** because **6** $\times \frac{1}{3} = 2.$

2.

$2 \div \frac{1}{4} =$ _____ because _____ $\times \frac{1}{4} = 2.$

3.
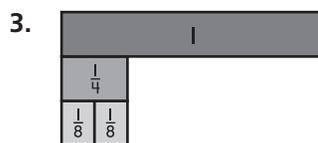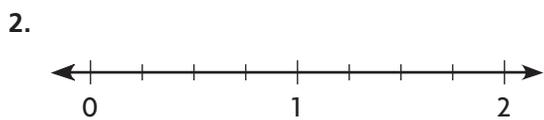
$\frac{1}{4} \div 2 =$ _____ because _____ $\times 2 = \frac{1}{4}.$

Divide. Draw a number line or use fraction strips.

4. $1 \div \frac{1}{5} =$ _____

5. $\frac{1}{6} \div 3 =$ _____

6. $4 \div \frac{1}{6} =$ _____

7. $3 \div \frac{1}{3} =$ _____

8. $\frac{1}{4} \div 6 =$ _____

9. $5 \div \frac{1}{4} =$ _____

Problem Solving REAL WORLD

10. Amy can run $\frac{1}{10}$ mile per minute. How many minutes will it take Amy to run 3 miles?

11. Jeremy has 3 yards of ribbon to use for wrapping gifts. He cuts the ribbon into pieces that are $\frac{1}{4}$ yard long. How many pieces of ribbon does Jeremy have?

_____

_____

Lesson Check

1. Kaley cuts half of a loaf of bread into 4 equal parts. What fraction of the whole loaf does each of the 4 parts represent?

   (A) $\frac{1}{8}$

   (B) $\frac{1}{6}$

   (C) $\frac{1}{4}$

   (D) $\frac{1}{2}$

2. When you divide a fraction less than 1 by a whole number greater than 1, how does the quotient compare to the dividend?

   (A) The quotient is greater than the dividend.

   (B) The quotient is less than the dividend.

   (C) The quotient is equal to the dividend.

   (D) There is not enough information to answer the question.

Spiral Review

3. A recipe for chicken and rice calls for $3\frac{1}{2}$ pounds of chicken. Lisa wants to adjust the recipe so that it yields $1\frac{1}{2}$ times as much chicken and rice. How much chicken will she need? **(Lesson 7.9)**

   (A) 2 pounds

   (B) $2\frac{1}{3}$ pounds

   (C) 5 pounds

   (D) $5\frac{1}{4}$ pounds

4. Tim and Sue share a pizza. Tim eats $\frac{2}{3}$ of the pizza. Sue eats half as much of the pizza as Tim does. What fraction of the pizza does Sue eat? **(Lesson 7.6)**

   (A) $\frac{1}{3}$

   (B) $\frac{1}{2}$

   (C) $\frac{3}{5}$

   (D) $\frac{2}{3}$

5. In gym class, you run $\frac{3}{5}$ mile. Your coach runs 10 times that distance each day. How far does your coach run each day? **(Lesson 7.3)**

   (A) $\frac{7}{5}$ miles

   (B) $2\frac{3}{5}$ miles

   (C) 3 miles

   (D) 6 miles

6. Sterling plants a tree that is $4\frac{3}{4}$ feet tall. One year later, the tree is $5\frac{2}{5}$ feet tall. How many feet did the tree grow? **(Lesson 6.7)**

   (A) $\frac{13}{20}$ foot

   (B) 8 feet

   (C) $10\frac{3}{20}$ feet

   (D) 13 feet

Problem Solving • Use Multiplication

1. Sebastian bakes 4 pies and cuts each pie into sixths. How many $\frac{1}{6}$-pie slices does he have?
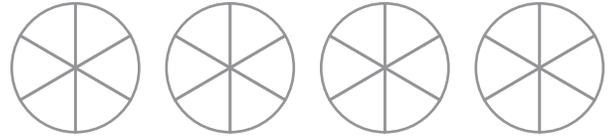
To find the total number of sixths in the 4 pies, multiply 4 by the number of sixths in each pie.
$4 \div \frac{1}{6} = 4 \times 6 = 24$ **one-sixth-pie slices**

2. Ali has 2 vegetable pizzas that she cuts into eighths. How many $\frac{1}{8}$-size pieces does she have?

_____

3. A baker has 6 loaves of bread. Each loaf weighs 1 pound. He cuts each loaf into thirds. How many $\frac{1}{3}$-pound loaves of bread does the chef now have?

_____

4. Suppose the baker has 4 loaves of bread and cuts the loaves into halves. How many $\frac{1}{2}$-pound loaves of bread would the baker have?

_____

5. Madalyn has 3 watermelons that she cuts into halves to give to her neighbors. How many neighbors will get a $\frac{1}{2}$-size piece of watermelon?

_____

6. A landscaper had 5 tons of rock to build decorative walls. He used $\frac{1}{4}$ ton of rock for each wall. How many decorative walls did he build?

_____

Lesson Check

1. Julia has 12 pieces of fabric and cuts each piece into fourths. How many $\frac{1}{4}$ pieces of fabric does she have?

Ⓐ 3

Ⓑ 4

Ⓒ 24

Ⓓ 48

2. Josue has 3 cheesecakes that he cuts into thirds. How many $\frac{1}{3}$-size cheesecake pieces does he have?

Ⓐ 9

Ⓑ 6

Ⓒ 3

Ⓓ 1

Spiral Review

3. Which of the following multiplication sentences can you use to help you find the quotient $6 \div \frac{1}{4}$? **(Lesson 8.1)**

Ⓐ $6 \times \frac{1}{4} = \frac{6}{4}$

Ⓑ $\frac{1}{6} \times 4 = \frac{4}{6}$

Ⓒ $\frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$

Ⓓ $24 \times \frac{1}{4} = 6$

4. Ellie uses 12.5 pounds of potatoes to make mashed potatoes. She uses one-tenth as many pounds of butter as potatoes. How many pounds of butter does Ellie use? **(Lesson 5.1)**

Ⓐ   0.125 pound

Ⓑ   1.25 pounds

Ⓒ   125 pounds

Ⓓ 1,250 pounds

5. Tiffany collects perfume bottles. She has 99 bottles in her collection. Two-thirds of her perfume bottles are made of crystal. How many of the perfume bottles in Tiffany's collection are made of crystal? **(Lesson 7.1)**

Ⓐ 11

Ⓑ 33

Ⓒ 66

Ⓓ 99

6. Stephen makes a blueberry pie and cuts it into 6 slices. He eats $\frac{1}{3}$ of the pie over the weekend. How many slices of pie does Stephen eat over the weekend? **(Lesson 7.3)**

Ⓐ 6

Ⓑ 3

Ⓒ 2

Ⓓ 1

Name _____

Connect Fractions to Division

Complete the number sentence to solve.

1. Six students share 8 apples equally. How many apples does each student get?

$$8 \div 6 = \underline{\dfrac{8}{6}, \text{ or } 1\dfrac{1}{3}}$$

2. Ten boys share 7 cereal bars equally. What fraction of a cereal bar does each boy get?

$7 \div 10 = $ _____

3. Eight friends share 12 pies equally. How many pies does each friend get?

$12 \div 8 = $ _____

4. Three girls share 8 yards of fabric equally. How many yards of fabric does each girl get?

$8 \div 3 = $ _____

5. Five bakers share 2 loaves of bread equally. What fraction of a loaf of bread does each baker get?

$2 \div 5 = $ _____

6. Nine friends share 6 cookies equally. What fraction of a cookie does each friend get?

$6 \div 9 = $ _____

7. Twelve students share 3 pizzas equally. What fraction of a pizza does each student get?

$3 \div 12 = $ _____

8. Three sisters share 5 sandwiches equally. How many sandwiches does each sister get?

$5 \div 3 = $ _____

Problem Solving REAL WORLD

9. There are 12 students in a jewelry-making class and 8 sets of charms. What fraction of a set of charms will each student get?

_____

_____

10. Five friends share 6 cheesecakes equally. How many cheesecakes will each friend get?

_____

_____

Lesson Check

1. Eight friends share 4 bunches of grapes equally. What fraction of a bunch of grapes does each friend get?

   (A) $\frac{1}{8}$

   (B) $\frac{1}{4}$

   (C) $\frac{1}{2}$

   (D) 2

2. Ten students share 8 pieces of poster board equally. What fraction of a piece of poster board does each student get?

   (A) $1\frac{4}{5}$

   (B) $1\frac{1}{4}$

   (C) $\frac{4}{5}$

   (D) $\frac{5}{9}$

Spiral Review

3. Arturo has a log that is 4 yards long. He cuts the log into pieces that are $\frac{1}{3}$-yard long. How many pieces will Arturo have? **(Lesson 8.1)**

   (A) $\frac{3}{4}$

   (B) $\frac{4}{3}$

   (C) 6

   (D) 12

4. Vu has 2 pizzas that he cuts into sixths. How many $\frac{1}{6}$-size pieces does he have? **(Lesson 8.2)**

   (A) 12

   (B) 6

   (C) 3

   (D) $\frac{1}{3}$

5. Kayaks rent for $35 per day. Which expression can you use to find the cost in dollars of renting 3 kayaks for a day? **(Lesson 1.3)**

   (A) $(3 + 30) + (3 + 5)$

   (B) $(3 \times 30) + (3 \times 5)$

   (C) $(3 + 30) \times (3 + 5)$

   (D) $(3 \times 30) \times (3 \times 5)$

6. Louisa is 152.7 centimeters tall. Her younger sister is 8.42 centimeters shorter than she is. How tall is Louisa's younger sister? **(Lesson 3.9)**

   (A) 6.85 cm

   (B) 144.28 cm

   (C) 144.38 cm

   (D) 154.28 cm

Fraction and Whole-Number Division

Write a related multiplication sentence to solve.

1. $3 \div \frac{1}{2}$

2. $\frac{1}{5} \div 3$

3. $2 \div \frac{1}{8}$

4. $\frac{1}{3} \div 4$

$\underline{\mathbf{3 \times 2 = 6}}$ _____ _____ _____

5. $5 \div \frac{1}{4}$

6. $\frac{1}{2} \div 2$

7. $\frac{1}{4} \div 6$

8. $6 \div \frac{1}{5}$

_____ _____ _____ _____

9. $\frac{1}{5} \div 5$

10. $4 \div \frac{1}{8}$

11. $\frac{1}{3} \div 7$

12. $9 \div \frac{1}{2}$

_____ _____ _____ _____

Problem Solving REAL WORLD

13. Isaac has a piece of rope that is 5 yards long. Into how many $\frac{1}{2}$-yard pieces of rope can Isaac cut the rope?

14. Two friends share $\frac{1}{2}$ of a pineapple equally. What fraction of a whole pineapple does each friend get?

_____ _____

Lesson Check

1. Sean divides 8 cups of granola into $\frac{1}{4}$-cup servings. How many servings of granola does he have?

    (A) 32

    (B) 16

    (C) 2

    (D) $\frac{1}{2}$

2. Brandy solved $\frac{1}{6} \div 5$ by using a related multiplication expression. Which multiplication expression did she use?

    (A) 6×5

    (B) $6 \times \frac{1}{5}$

    (C) $\frac{1}{6} \times 5$

    (D) $\frac{1}{6} \times \frac{1}{5}$

Spiral Review

3. Nine friends share 12 pounds of pecans equally. How many pounds of pecans does each friend get? **(Lesson 8.3)**

    (A) $\frac{3}{4}$ pound

    (B) $1\frac{1}{3}$ pounds

    (C) $1\frac{1}{2}$ pounds

    (D) $1\frac{2}{3}$ pounds

4. A scientist has $\frac{2}{3}$ liter of solution. He uses $\frac{1}{2}$ of the solution for an experiment. How much solution does the scientist use for the experiment? **(Lesson 7.6)**

    (A) $\frac{1}{6}$ liter

    (B) $\frac{1}{4}$ liter

    (C) $\frac{1}{3}$ liter

    (D) $\frac{1}{2}$ liter

5. Naomi needs 2 cups of sugar for a cake she is baking. She only has a $\frac{1}{4}$-cup measuring cup. How many times will Naomi need to fill the measuring cup to get 2 cups of sugar? **(Lesson 8.2)**

    (A) 2

    (B) 4

    (C) 6

    (D) 8

6. Michaela caught 3 fish, which weigh a total of $19\frac{1}{2}$ pounds. One fish weighs $7\frac{5}{8}$ pounds and another weighs $5\frac{3}{4}$ pounds. How much does the third fish weigh? **(Lesson 6.9)**

    (A) $6\frac{1}{8}$ pounds

    (B) $6\frac{5}{8}$ pounds

    (C) $7\frac{1}{8}$ pounds

    (D) $7\frac{5}{8}$ pounds

Name _____

Interpret Division with Fractions

Write an equation to represent the problem. Then solve.

1. Daniel has a piece of wire that is $\frac{1}{2}$ yard long. He cuts the wire into 3 equal pieces. What fraction of a yard is each piece?

$\frac{1}{2} \div 3 = n; \frac{1}{2} \times \frac{1}{3} = n;$

$n = \frac{1}{6}; \frac{1}{6}$ **yard**

2. Vita has a piece of ribbon that is 5 meters long. She cuts the ribbon into pieces that are each $\frac{1}{3}$ meter long. How many pieces does she cut?

Draw a diagram to represent the problem. Then solve.

3. Leah has 3 muffins. She cuts each muffin into fourths. How many $\frac{1}{4}$-muffin pieces does she have?

4. Two friends share $\frac{1}{4}$ gallon of lemonade equally. What fraction of the gallon of lemonade does each friend get?

5. Write a story problem to represent $3 \div \frac{1}{2}$.

6. Write a story problem to represent $\frac{1}{4} \div 2$.

Problem Solving REAL WORLD

7. Spencer has $\frac{1}{3}$ pound of nuts. He divides the nuts equally into 4 bags. What fraction of a pound of nuts is in each bag?

8. Humma has 3 apples. She slices each apple into eighths. How many $\frac{1}{8}$-apple slices does she have?

Lesson Check

1. Abigail has $\frac{1}{2}$ gallon of orange juice. She pours the same amount of the juice into each of 6 glasses. Which equation represents the fraction of a gallon of orange juice in each glass?

Ⓐ $6 \div \frac{1}{2} = n$

Ⓑ $6 \div 2 = n$

Ⓒ $\frac{1}{2} \div \frac{1}{6} = n$

Ⓓ $\frac{1}{2} \div 6 = n$

2. Which situation can be represented by $4 \div \frac{1}{2}$?

Ⓐ Riley has a piece of wire that is $\frac{1}{2}$ yard long. He cuts it into fourths. How long is each piece of wire?

Ⓑ Riley has a piece of wire that is 4 yards long. He cuts it into pieces that are $\frac{1}{2}$ yard long. How many pieces of wire does Riley have?

Ⓒ Riley has 4 pieces of wire. Each piece is $\frac{1}{2}$ yard long. How much wire does Riley have in all?

Ⓓ Riley has a piece of wire that is 4 yards long. He cuts it in half. How long is each piece of wire?

Spiral Review

3. Hannah buys $\frac{2}{3}$ pound of roast beef. She uses $\frac{1}{4}$ pound to make a sandwich for lunch. How much roast beef does she have left? **(Lesson 6.5)**

Ⓐ $\frac{5}{12}$ pound

Ⓑ $\frac{1}{2}$ pound

Ⓒ $\frac{11}{12}$ pound

Ⓓ 2 pounds

4. Alex buys $2\frac{1}{2}$ pounds of grapes. He buys $1\frac{1}{4}$ times as many pounds of apples as grapes. How many pounds of apples does Alex buy? **(Lesson 7.9)**

Ⓐ $1\frac{1}{4}$ pounds

Ⓑ $3\frac{1}{8}$ pounds

Ⓒ $3\frac{1}{3}$ pounds

Ⓓ $3\frac{3}{4}$ pounds

5. Maritza's car has 16 gallons of gas in the tank. She uses $\frac{3}{4}$ of the gas. How many gallons of gas does Maritza use? **(Lesson 7.3)**

Ⓐ 4 gallons

Ⓑ $5\frac{1}{4}$ gallons

Ⓒ 12 gallons

Ⓓ $21\frac{1}{3}$ gallons

6. Jaime has a board that is 8 feet long. He cuts the board into three equal pieces. How long is each piece? **(Lesson 8.3)**

Ⓐ $\frac{3}{8}$ foot

Ⓑ $1\frac{2}{3}$ feet

Ⓒ $2\frac{2}{3}$ feet

Ⓓ 24 feet

Chapter 8 Extra Practice

Lesson 8.1

Divide. Draw a number line or use fraction strips.

1. $2 \div \dfrac{1}{4} =$ _____

2. $\dfrac{1}{7} \div 3 =$ _____

3. $4 \div \dfrac{1}{5} =$ _____

4. $3 \div \dfrac{1}{2} =$ _____

5. $\dfrac{1}{8} \div 5 =$ _____

6. $\dfrac{1}{9} \div 3 =$ _____

7. $5 \div \dfrac{1}{6} =$ _____

8. $8 \div \dfrac{1}{3} =$ _____

9. $\dfrac{1}{5} \div 5 =$ _____

Lesson 8.2

Draw a diagram to solve.

1. A baker has 6 small bags of flour. Each bag weighs 1 pound. She divides each bag into thirds. How many $\frac{1}{3}$-pound bags of flour does the baker have?

2. Merril cuts 6 apple pies into halves. How many $\frac{1}{2}$-size pie pieces does she have?

Lesson 8.3

Complete the number sentence to solve.

1. Three students share 5 peaches equally. How many peaches does each student get?

    $5 \div 3 =$ _____

2. Six friends share 4 sandwiches equally. What fraction of a sandwich does each friend get?

    $4 \div 6 =$ _____

3. Ten cousins share 3 pizzas equally. What fraction of a pizza does each cousin get?

    $3 \div 10 =$ _____

4. Four boys share 9 yards of fishing wire equally. How many yards of fishing wire does each boy get?

    $9 \div 4 =$ _____

Lesson 8.4

Write a related multiplication expression to solve.

1. $6 \div \frac{1}{4}$

    _____

2. $9 \div \frac{1}{3}$

    _____

3. $\frac{1}{6} \div 7$

    _____

4. $\frac{1}{4} \div 10$

    _____

Lesson 8.5

1. Write an equation to represent the problem. Then solve.

    Luz has $\frac{1}{3}$ pound of cherries. She divides the cherries equally into 2 bags. What fraction of a pound of cherries is in each bag?

    _____

    _____

2. Draw a diagram to represent the problem. Then solve.

    Tran has 4 submarine sandwiches. He cuts each sandwich into thirds. How many $\frac{1}{3}$-sandwich pieces does he have?

    _____