

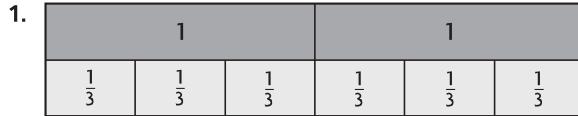
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Divide Fractions and Whole Numbers

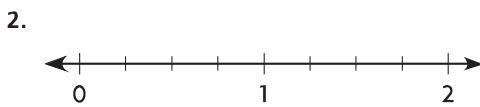
COMMON CORE STANDARDS CC.5.NF.7a, CC.5.NF.7b

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

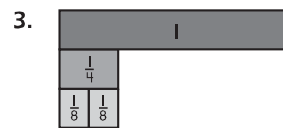
Divide and check the quotient.



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



$2 \div \frac{1}{4} = \underline{8}$ because $\underline{8} \times \frac{1}{4} = 2$.



$\frac{1}{4} \div 2 = \underline{\frac{1}{8}}$ because $\underline{\frac{1}{8}} \times 2 = \frac{1}{4}$.

Divide. Draw a number line or use fraction strips.

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

5. $\frac{1}{6} \div 3 = \underline{\frac{1}{18}}$

6. $4 \div \frac{1}{6} = \underline{24}$

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

8. $\frac{1}{4} \div 6 = \underline{\frac{1}{24}}$

9. $5 \div \frac{1}{4} = \underline{20}$

Problem Solving

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

30 minutes

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?

12 pieces

Lesson Check (CC.5.NF.7a, CC.5.NF.7b)

- 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?
 - $\frac{1}{8}$
 - $\frac{1}{6}$
 - $\frac{1}{4}$
 - $\frac{1}{2}$
- 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.
 - 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 (CC.5.NF.1, CC.5.NF.4a, CC.5.NF.6)

- 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
 - $5\frac{1}{4}$ pounds
- 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
 - 6 miles
- 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)
 - $\frac{1}{3}$
 - (B) $\frac{1}{2}$
 - (C) $\frac{3}{5}$
 - (D) $\frac{2}{3}$
- 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)
 - $\frac{13}{20}$ foot
 - (B) 8 feet
 - (C) $10\frac{3}{20}$ feet
 - (D) 13 feet

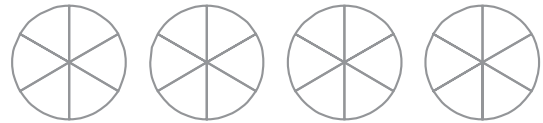
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Problem Solving • Use Multiplication

COMMON CORE STANDARD CC.5.NF.7b

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

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.

$$4 \div \frac{1}{6} = 4 \times 6 = 24 \text{ one-sixth-pie slices}$$

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

16 one-eighth-size pieces

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?

18 one-third-pound loaves

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?

8 one-half-pound loaves

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 neighbors

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?

20 decorative walls

Lesson Check (CC.5.NF.7b)

- Julia has 12 pieces of fabric and cuts each piece into fourths. How many $\frac{1}{4}$ pieces of fabric does she have?
 - (A) 3
 - (B) 4
 - (C) 24
 - (D) 48
- Josue has 3 cheesecakes that he cuts into thirds. How many $\frac{1}{3}$ -size cheesecake pieces does he have?
 - (A) 9
 - (B) 6
 - (C) 3
 - (D) 1

Spiral Review (CC.5.NBT.2, CC.5.NF.4a, CC.5.NF.7a, CC.5.NF.7b)

- Which of the following multiplication sentences can you use to help you find the quotient $6 \div \frac{1}{4}$? (Lesson 8.1)
 - (A) $6 \times \frac{1}{4} = \frac{6}{4}$
 - (B) $\frac{1}{6} \times 4 = \frac{4}{6}$
 - (C) $\frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$
 - (D) $24 \times \frac{1}{4} = 6$
- 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)
 - (A) 0.125 pound
 - (B) 1.25 pounds
 - (C) 125 pounds
 - (D) 1,250 pounds
- 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)
 - (A) 11
 - (B) 33
 - (C) 66
 - (D) 99
- 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)
 - (A) 6
 - (B) 3
 - (C) 2
 - (D) 1

Name _____

Connect Fractions to Division**COMMON CORE STANDARD** CC.5.NF.3

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Complete the number sentence to solve.

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

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

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

$$7 \div 10 = \underline{\frac{7}{10}}$$

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

$$12 \div 8 = \underline{\frac{12}{8}, \text{ or } 1\frac{1}{2}}$$

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

$$8 \div 3 = \underline{\frac{8}{3}, \text{ or } 2\frac{2}{3}}$$

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

$$2 \div 5 = \underline{\frac{2}{5}}$$

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

$$6 \div 9 = \underline{\frac{6}{9}, \text{ or } \frac{2}{3}}$$

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

$$3 \div 12 = \underline{\frac{3}{12}, \text{ or } \frac{1}{4}}$$

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

$$5 \div 3 = \underline{\frac{5}{3}, \text{ or } 1\frac{2}{3}}$$

Problem Solving 

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?

Each student will get $\frac{2}{3}$
of a set.

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

Each friend will get $1\frac{1}{5}$
cheesecakes.

Lesson Check (CC.5.NF.3)

- 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
- 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 (CC.5.NBT.6, CC.5.NBT.7, CC.5.NF.7a, CC.5.NF.7b)

- 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
- 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) $\frac{1}{3}$
- 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) $(3 \times 30) \times (3 \times 5)$
- 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

Name _____

Fraction and Whole-Number Division

COMMON CORE STANDARD CC.5.NF.7c

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

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

$3 \times 2 = 6$

$\frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$

$2 \times 8 = 16$

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

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

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

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

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

$5 \times 4 = 20$

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

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

$6 \times 5 = 30$

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

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

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

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

$\frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$

$4 \times 8 = 32$

$\frac{1}{3} \times \frac{1}{7} = \frac{1}{21}$

$9 \times 2 = 18$

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?

10 one-half-yard pieces

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

 $\frac{1}{4}$ of the pineapple

Lesson Check (CC.5.NF.7c)

- 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) $\frac{1}{2}$
- 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 (CC.5.NF.2, CC.5.NF.3, CC.5.NF.4a, CC.5.NF.7b)

- 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
- 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
- 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
- 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

COMMON CORE STANDARD CC.5.NF.7c

Apply and extend previous understandings of multiplication and division to multiply and divide 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?

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

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

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?

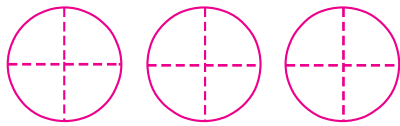
$$5 \div \frac{1}{3} = n; 5 \times 3 = n;$$

$$n = 15; 15 \text{ pieces}$$

Check students' diagrams. Possible diagrams are shown.

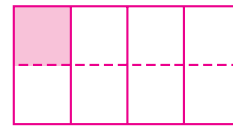
Draw a diagram to represent the problem. Then solve.

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



12 one-fourth-muffin pieces

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



$\frac{1}{8}$ gallon

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

Possible problem: Joe made 3 sandwiches. He cuts each sandwich into halves. How many sandwich halves does he have?

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

Possible problem: Penny has $\frac{1}{4}$ yard of ribbon. She cuts the ribbon into 2 equal pieces. How long is each piece of ribbon?

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?

$\frac{1}{12}$ pound

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

24 one-eighth-apple slices

Lesson Check (CC.5.NF.7c)

- 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?
 - (A) $6 \div \frac{1}{2} = n$
 - (B) $6 \div 2 = n$
 - (C) $\frac{1}{2} \div \frac{1}{6} = n$
 - (D) $\frac{1}{2} \div 6 = n$
- Which situation can be represented by $4 \div \frac{1}{2}$?
 - (A) 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?
 - (B) 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?
 - (C) Riley has 4 pieces of wire. Each piece is $\frac{1}{2}$ yard long. How much wire does Riley have in all?
 - (D) 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 (CC.5.NF.1, CC.5.NF.3, CC.5.NF.4a, CC.5.NF.6)

- 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)
 - (A) $\frac{5}{12}$ pound
 - (B) $\frac{1}{2}$ pound
 - (C) $\frac{11}{12}$ pound
 - (D) 2 pounds
- 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)
 - (A) $1\frac{1}{4}$ pounds
 - (B) $3\frac{1}{8}$ pounds
 - (C) $3\frac{1}{3}$ pounds
 - (D) $3\frac{3}{4}$ pounds
- 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)
 - (A) 4 gallons
 - (B) $5\frac{1}{4}$ gallons
 - (C) 12 gallons
 - (D) $21\frac{1}{3}$ gallons
- 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)
 - (A) $\frac{3}{8}$ foot
 - (B) $1\frac{2}{3}$ feet
 - (C) $2\frac{2}{3}$ feet
 - (D) 24 feet

Chapter 8 Extra Practice

Lesson 8.1

Divide. Draw a number line or use fraction strips.

1. $2 \div \frac{1}{4} = \underline{8}$

2. $\frac{1}{7} \div 3 = \underline{\frac{1}{21}}$

3. $4 \div \frac{1}{5} = \underline{20}$

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

5. $\frac{1}{8} \div 5 = \underline{\frac{1}{40}}$

6. $\frac{1}{9} \div 3 = \underline{\frac{1}{27}}$

7. $5 \div \frac{1}{6} = \underline{30}$

8. $8 \div \frac{1}{3} = \underline{24}$

9. $\frac{1}{5} \div 5 = \underline{\frac{1}{25}}$

Lesson 8.2

Draw a diagram to solve.

Check students' diagrams.

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

18 one-third-pound bags

12 one-half-size pie pieces

Lesson 8.3

Complete the number sentence to solve.

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

$$5 \div 3 = \underline{\frac{5}{3}, \text{ or } 1\frac{2}{3}}$$

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

$$3 \div 10 = \underline{\frac{3}{10}}$$

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

$$4 \div 6 = \underline{\frac{4}{6}, \text{ or } \frac{2}{3}}$$

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

$$9 \div 4 = \underline{\frac{9}{4}, \text{ or } 2\frac{1}{4}}$$

Lesson 8.4

Write a related multiplication expression to solve.

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

$$\underline{6 \times 4 = 24}$$

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

$$\underline{9 \times 3 = 27}$$

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

$$\underline{\frac{1}{6} \times \frac{1}{7} = \frac{1}{42}}$$

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

$$\underline{\frac{1}{4} \times \frac{1}{10} = \frac{1}{40}}$$

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?

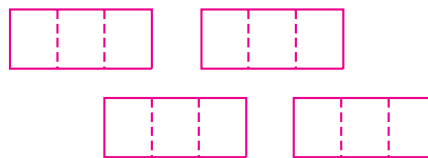
$$\underline{\frac{1}{3} \div 2 = n; \frac{1}{3} \times \frac{1}{2} = n;}$$

$$\underline{n = \frac{1}{6}; \frac{1}{6} \text{ pound}}$$

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?

Possible diagram is shown.



12 one-third-sandwich pieces