

# Divisibility Patterns (pages 178–180)



When you divide one whole number by a second whole number, and the quotient is a whole number, then the first whole number is divisible by the second. For example, 12 is divisible by 2 because the quotient  $12 \div 2$  is 6, a whole number. You can test for divisibility mentally by using the divisibility rules below.

### Divisibility Rules for 2, 3, 5, 6, 9, 10

A number is divisible by:

- 2 if the ones digit is divisible by 2.
- 3 if the sum of the digits is divisible by 3.
- 5 if the ones digit is 0 or 5.
- 6 if the number is divisible by both 2 and 3.
- 9 if the sum of the digits is divisible by 9.
- 10 if the ones digit is 0.

## EXAMPLES

### A Is 34 divisible by 2?

The ones digit is 4. Since  $4 \div 2 = 2$ , 4 is divisible by 2.

So, 34 is divisible by 2.

### B Is 52 divisible by 3?

The sum of the digits is  $5 + 2$ , or 7. Since 7 is not divisible by 3, 52 is not divisible by 3.

## Try These Together

### 1. Is 70 divisible by 5?

*HINT: Is the ones digit 0 or 5?*

### 2. Is 208 divisible by 9?

*HINT: Is the sum of the digits divisible by 9?*

## PRACTICE

**Determine whether the first number is divisible by the second number.**

3. 984; 2

4. 533; 3

5. 935; 5

6. 570; 3

7. 2,861; 2

8. 626; 6

9. 5,650; 10

10. 8,844; 6

11. 77,787; 9

**State whether each number is divisible by 2, 3, 5, 6, 9, or 10.**

12. 365

13. 1,170

14. 887

15. 486

16. 620

17. 2,865

18. 350

19. 4,544

20. 51

**21. Design** The fourth grade class at Chavez Elementary School is having a group photo taken. There are 102 students in the fourth grade. Can they form 6 equal rows for the photo?

**22. Standardized Test Practice** Which number is divisible by both 2 and 9?

A 5,148

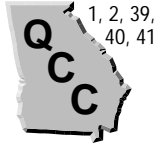
B 5,618

C 8,364

D 9,782

Answers: 1. yes 2. no 3. yes 4. no 5. yes 6. yes 7. no 8. no 9. yes 10. yes 11. yes 12. 5 13. 2, 3, 5, 6, 9, 10 14. none 15. 2, 3, 6, 9 16. 2, 5, 10 17. 3, 5 18. 2, 5, 10 19. 2 20. 3 21. yes 22. A

# Prime Factorization (pages 182–184)



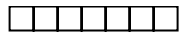
A **composite number** is any whole number greater than one that has more than two factors. For example, 6 is a composite number because its factors are 1, 2, 3, and 6. That’s because  $1 \times 6$  and  $2 \times 3$  each equal 6.

A number with only 2 factors is a **prime number**. The numbers 0 and 1 are neither prime nor composite.

Every composite number can be expressed as a product of prime numbers. This is called the **prime factorization** of the number. You can use a **factor tree** to find prime factorizations.

## EXAMPLES

**A** Is 7 a prime number?



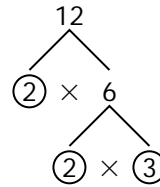
How many rectangles can you make out of 7 squares?

$$1 \times 7$$

Only one rectangle, so the factors of 7 are 1 and 7. Since there are only 2 factors, 7 is a prime number.

**B** Find the prime factorization of 12.

Use a factor tree.



Factor 12. 12 is divisible by 2. Circle the prime number 2.

Factor 6. 6 is divisible by 2. Circle the prime numbers 2 and 3. The prime factorization is  $2 \times 2 \times 3$ , or  $2^2 \times 3$ .

## Try These Together

1. Is 22 a prime number?

*HINT: Does it have more than 2 factors?*

2. Find the prime factorization of 18.

*HINT: Use a factor tree to find prime factors.*

## PRACTICE

Tell whether each number is prime or composite.

- |        |         |         |
|--------|---------|---------|
| 3. 2   | 4. 11   | 5. 14   |
| 6. 13  | 7. 84   | 8. 31   |
| 9. 111 | 10. 187 | 11. 113 |

Find the prime factorization of each number.

- |        |        |         |
|--------|--------|---------|
| 12. 10 | 13. 33 | 14. 87  |
| 15. 54 | 16. 29 | 17. 34  |
| 18. 61 | 19. 57 | 20. 112 |

21. **Entertainment** A cable system has 42 channels. Express 42 as a product of primes.



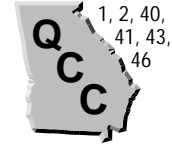
22. **Standardized Test Practice** What is the least prime number greater than 50?

- A 51                      B 53                      C 57                      D 59

Answers: 1. no 2.  $2 \times 3^2$  3. prime 4. prime 5. composite 6. prime 7. composite 8. prime 9. composite 10. composite 11. prime 12.  $2 \times 5$  13.  $3 \times 11$  14.  $3 \times 29$  15.  $2 \times 3^3$  16. 29 17.  $2 \times 17$  18. prime 19.  $3 \times 19$  20.  $2^4 \times 7$  21.  $2 \times 3 \times 7$  22. B

# Greatest Common Factor

(pages 188–190)



Two or more numbers may both have the same factor, called a common factor. The greatest of the common factors of two or more numbers is called the **greatest common factor (GCF)** of the numbers. There are two methods you can use to find the GCF of two or more numbers.

<b>Method 1: Make a List</b>	<ul style="list-style-type: none"> <li>• List all of the factors of each number.</li> <li>• Identify the common factors.</li> <li>• The greatest of the common factors is the GCF.</li> </ul>
<b>Method 2: Use Prime Factorization</b>	<ul style="list-style-type: none"> <li>• Write the prime factorization of each number</li> <li>• Identify all of the common prime factors.</li> <li>• The product of the common prime factors is the GCF.</li> </ul>

## EXAMPLES

**A** Find the GCF of 15 and 18.

*Make a list of the factors of each number.*

factors of 15: 1, 3, 5, 15

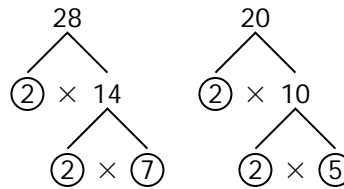
factors of 18: 1, 2, 3, 6, 9, 18

The common factors are 1 and 3.

The GCF of 15 and 18 is 3.

**B** Find the GCF of 20 and 28.

*Write the prime factorization of each number.*



The common prime factors are 2 and 2. The GCF of 20 and 28 is  $2 \times 2$ , or 4.

## Try These Together

1. Find the GCF of 14 and 28.

*HINT: Make a list of factors.*

2. Find the GCF of 32 and 44.

*HINT: Use factor trees to find the common prime factors.*

## PRACTICE

*Find the GCF of each set of numbers by either method.*

- |            |                |                 |
|------------|----------------|-----------------|
| 3. 7, 42   | 4. 10, 36      | 5. 44, 66       |
| 6. 30, 35  | 7. 4, 12, 28   | 8. 26, 52, 91   |
| 9. 62, 93  | 10. 59, 118    | 11. 25, 75      |
| 12. 30, 33 | 13. 14, 18, 22 | 14. 38, 57, 114 |

**15. Sales** Anton has made 24 gingersnaps, 60 peanut butter cookies, and 84 sugar cookies for a bake sale. What is the greatest number of boxes that he can pack them in so that the boxes contain the same number and types of cookies?



**16. Standardized Test Practice** What is the GCF of 40 and 72?

A 2

B 4

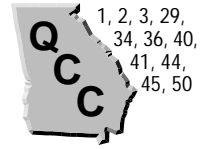
C 8

D 16

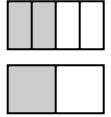
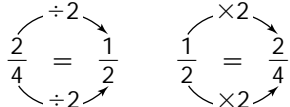
Answers: 1. 14 2. 4 3. 7 4. 2 5. 22 6. 5 7. 4 8. 13 9. 31 10. 59 11. 25 12. 3 13. 2 14. 19 15. 12 boxes 16. C

# Simplifying Fractions and Ratios

(pages 193–196)



A **ratio** is a comparison of two numbers by division. Ratios can also be expressed as fractions, such as  $\frac{2}{4}$ . You can write the fraction  $\frac{2}{4}$  as  $\frac{1}{2}$  and also as  $\frac{4}{8}$ . These fractions are **equivalent fractions**, because they name the same number. Use equivalent fractions to write fractions in **simplest form**. A fraction is in simplest form when the GCF of the numerator and denominator is 1.

<p><b>Method 1 for Finding Equivalent Fractions: Use a Model</b></p>	 <p>Two out of four, or <math>\frac{2}{4}</math> of the parts of the rectangle are shaded. One out of two, or <math>\frac{1}{2}</math> of the parts of the rectangle is shaded. The rectangles are the same size, and the same amount of each is shaded, so the fractions are equivalent.</p>
<p><b>Method 2 for Finding Equivalent Fractions: Use Paper and Pencil</b></p>	 <p>Multiply or divide both the numerator and the denominator of a fraction by the same nonzero number.</p>

## EXAMPLES

Replace each ■ with a number so that the fractions are equivalent.

**A**  $\frac{2}{3} = \frac{6}{\blacksquare}$

Since  $2 \times 3 = 6$ , multiply the denominator also by 3.

$\frac{2}{3} = \frac{6}{9}$

**B**  $\frac{15}{20} = \frac{\blacksquare}{4}$

Since  $20 \div 5 = 4$ , divide the numerator also by 5.

$\frac{15}{20} = \frac{3}{4}$

## Try These Together

1.  $\frac{5}{6} = \frac{20}{\blacksquare}$

*HINT: Multiply the numerator and denominator by the same number.*

2. Write  $\frac{10}{12}$  in simplest form.

*HINT: The GCF of the numerator and denominator must be 1.*

## PRACTICE

Replace each ■ with a number so that the fractions are equivalent.

3.  $\frac{2}{3} = \frac{18}{\blacksquare}$

4.  $\frac{8}{24} = \frac{\blacksquare}{3}$

5.  $\frac{5}{6} = \frac{30}{\blacksquare}$



6. **Standardized Test Practice** What is  $\frac{27}{30}$  in simplest form?

**A**  $\frac{2}{3}$

**B**  $\frac{9}{15}$

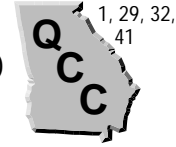
**C**  $\frac{22}{24}$

**D**  $\frac{9}{10}$

Answers: 1. 24 2.  $\frac{5}{6}$  3. 27 4. 1 5. 36 6. D

# Mixed Numbers and Improper Fractions

(pages 198–201)



A **mixed number** shows the sum of a whole number and a fraction. For example,  $2\frac{5}{6}$  is a mixed number that means  $2 + \frac{5}{6}$ . A fraction such as  $\frac{8}{7}$ , where the numerator is greater than or equal to the denominator, is known as an **improper fraction**. You can rewrite a mixed number as an improper fraction.

<b>Use Paper and Pencil to Express a Mixed Number as an Improper Fraction.</b>	To write a mixed number as an improper fraction, first multiply the whole number by the denominator and add the numerator. Write this sum over the denominator. $2\frac{1}{8} = \frac{(2 \times 8) + 1}{8} = \frac{17}{8}$
<b>Divide to Express an Improper Fraction as a Mixed Number.</b>	Express $\frac{5}{3}$ as a mixed number. Divide the numerator by the denominator. $\begin{array}{r} 1 \\ 3 \overline{)5} \\ \underline{-3} \\ 2 \end{array}$ Write the remainder in the numerator of a fraction that has the divisor as the denominator. So $\frac{5}{3} = 1\frac{2}{3}$ .

## EXAMPLES

**A** Express  $3\frac{2}{3}$  as an improper fraction.

$$3\frac{2}{3} = \frac{(3 \times 3) + 2}{3} = \frac{11}{3} \quad \text{Multiply 3 by 3 and add 2. Write the result over 3.}$$

**B** Express  $\frac{8}{7}$  as a mixed number.

$8 \div 7 = 1 \text{ R}1$  Write the remainder in the numerator of a fraction that has the divisor as the denominator.

$$\frac{8}{7} = 1\frac{1}{7}$$

## PRACTICE

Express each mixed number as an improper fraction.

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

2.  $10\frac{2}{5}$

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

4.  $5\frac{5}{9}$

Express each improper fraction as a mixed number.

5.  $\frac{11}{2}$

6.  $\frac{16}{5}$

7.  $\frac{23}{8}$

8.  $\frac{25}{3}$

**9. Standardized Test Practice** Express two and two-ninths as an improper fraction.

A  $\frac{22}{9}$

B  $\frac{20}{9}$

C  $\frac{18}{9}$

D  $\frac{12}{9}$


Answers: 1.  $\frac{29}{7}$  2.  $\frac{7}{2}$  3.  $\frac{5}{2}$  4.  $\frac{50}{9}$  5.  $5\frac{1}{5}$  6.  $3\frac{1}{2}$  7.  $2\frac{8}{7}$  8.  $8\frac{1}{8}$  9. B

# Length in the Customary System

(pages 202–205)



Sometimes you need to measure objects using fractions of customary units. The most commonly used customary units of length are the **inch**, **foot**, **yard**, and **mile**.

<b>Customary Units of Length</b>	1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet or 36 inches 1 mile (mi) = 1,760 yards or 5,280 feet
<b>Using a Ruler</b>	 Most rulers are separated into eighths.

## EXAMPLES

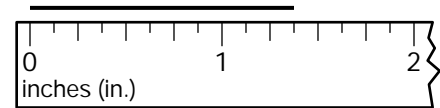
**A**  $36 \text{ in.} = \underline{\quad} \text{ ft}$

Since  $1 \text{ ft} = 12 \text{ in.}$ , it follows that  $36 \text{ in.}$ , or  $3 \times 12 \text{ in.}$ , equals 3 ft.

**B** Draw a line segment measuring  $1\frac{3}{8}$  inches.

Find  $1\frac{3}{8}$  on the ruler.

Draw a line segment from 0 to  $1\frac{3}{8}$ .



## Try These Together

1.  $2 \text{ mi} = \underline{\quad} \text{ yd}$

*HINT: Start with  $1 \text{ mi} = 1,760 \text{ yd}$ . Multiply.*

2. Draw a line segment measuring  $2\frac{1}{4}$  in.

*HINT: How many eighths are in  $\frac{1}{4}$ ?*

## PRACTICE

Complete.

3.  $6 \text{ ft} = \underline{\quad} \text{ yd}$

4.  $96 \text{ in.} = \underline{\quad} \text{ ft}$

5.  $36 \text{ ft} = \underline{\quad} \text{ yd}$

Draw a line segment of each length.

6.  $\frac{3}{4}$  inch

7.  $1\frac{1}{8}$  inches

8.  $2\frac{3}{8}$  inches

9. **Architecture** A room is 12 feet wide. How many inches wide is the room?



10. **Standardized Test Practice** Complete  $9 \text{ yd} = \underline{\quad} \text{ in.}$

A 324

B 27

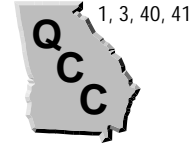
C 108

D 3

Answers: 1. 3,520 2. See Answer Key. 3. 2 4. 8 5. 12 6–8. See Answer Key. 9. 144 in. 10. A

## Least Common Multiple

(pages 206–209)



A **multiple** of a number is the product of that number and any whole number. Two different numbers can share some of the same multiples. These are called **common multiples**. The least of the common multiples of two or more numbers, other than zero, is called the **least common multiple (LCM)**. Use the following method to find the LCM.

<b>Finding the LCM</b>	Use prime factorization. <ul style="list-style-type: none"> <li>• Write the prime factorization for each number.</li> <li>• Identify all common prime factors. Then find the product of the common prime factors using each common factor only once, and multiply by any remaining prime factors. This product is the LCM.</li> </ul>
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## EXAMPLES

**A** Is 28 a multiple of 4?

$4 \times 0 = 0 \quad 4 \times 4 = 16$

$4 \times 1 = 4 \quad 4 \times 5 = 20$

$4 \times 2 = 8 \quad 4 \times 6 = 24 \quad \text{Yes, 28 is a}$

$4 \times 3 = 12 \quad 4 \times 7 = 28 \quad \text{multiple of 4.}$

**B** Find the LCM of 10 and 12.

Use prime factorization.

$10 = 2 \times 5$

$12 = 2 \times 2 \times 3$

The LCM is  $2 \times 2 \times 3 \times 5$ , or 60.

## Try These Together

1. Is 26 a multiple of 6?

*HINT: Is 26 a product of 6 and any whole number?*

2. Find the LCM of 8 and 10.

*HINT: Use prime factorization. Use common prime factors only once.*

## PRACTICE

**Determine whether the first number is a multiple of the second number.**

3. 52; 13

4. 64; 8

5. 24; 4

6. 64; 7

7. 53; 6

8. 98; 14

9. 32; 9

10. 48; 3

11. 132; 11

**Find the LCM for each set of numbers.**

12. 7, 14

13. 3, 5

14. 4, 9

15. 4, 22

16. 20, 45

17. 2, 9, 15

18. 3, 15, 45

19. 10, 30, 65

**20. Design** Ingrid is stringing 3 bracelets, one with 4 mm beads, one with 5 mm beads, and one with 6 mm beads. What is the shortest length where all the bracelets are equal?



**21. Standardized Test Practice** Find the LCM of 5, 6, and 45.

A 45

B 60

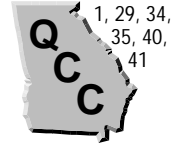
C 90

D 135

Answers: 1. no 2. 40 3. yes 4. yes 5. yes 6. no 7. no 8. yes 9. no 10. yes 11. yes 12. 14 13. 15 14. 36 15. 44 16. 180 17. 90 18. 45 19. 390 20. 60 mm 21. C

# Comparing and Ordering Fractions

(pages 210–213)



To compare fractions with different denominators, find the **least common denominator (LCD)**, or the LCM of the denominators.

## EXAMPLES

**A** Find the LCD for  $\frac{1}{2}$  and  $\frac{1}{3}$ .

The LCD of  $\frac{1}{2}$  and  $\frac{1}{3}$  is the LCM of 2 and 3.

Multiples of 2: 0, 2, 4, **6**, 8  
Multiples of 3: 0, 3, **6**, 9

The LCM of 2 and 3 is 6, so the LCD for  $\frac{1}{2}$  and  $\frac{1}{3}$  is also 6.

**B** Which fraction is greater,  $\frac{2}{3}$  or  $\frac{3}{4}$ ?

Find the LCD of  $\frac{2}{3}$  and  $\frac{3}{4}$ . The LCM of 3 and 4 is 12, so the LCD is also 12.

$\frac{2}{3} = \frac{8}{12}$  and  $\frac{3}{4} = \frac{9}{12}$ . Multiply the numerator and denominator of  $\frac{2}{3}$  by 4 and multiply the numerator and denominator of  $\frac{3}{4}$  by 3 in order to rewrite  $\frac{2}{3}$  and  $\frac{3}{4}$  as equivalent fractions with 12 as the denominator. Since  $\frac{8}{12} < \frac{9}{12}$ , it is true that  $\frac{2}{3} < \frac{3}{4}$ , so  $\frac{3}{4}$  is the greater fraction.

## Try These Together

1. Find the LCD for  $\frac{2}{5}$  and  $\frac{1}{6}$ .

*HINT: Find the LCM of the denominators.*

2. Which fraction is greater,  $\frac{1}{4}$  or  $\frac{2}{5}$ ?

*HINT: Find the LCD and then multiply both numerator and denominator to rewrite the fractions with the same denominator.*

## PRACTICE

Find the LCD for each pair of fractions.

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

4.  $\frac{4}{7}, \frac{9}{14}$

5.  $\frac{3}{10}, \frac{7}{8}$

6.  $\frac{1}{4}, \frac{3}{8}$

Replace each  $\bullet$  with  $<$ ,  $>$ , or  $=$  to make a true sentence.

7.  $\frac{4}{7} \bullet \frac{8}{14}$

8.  $\frac{2}{7} \bullet \frac{1}{9}$

9.  $\frac{1}{6} \bullet \frac{3}{18}$

10.  $\frac{2}{5} \bullet \frac{1}{3}$

11.  $\frac{1}{5} \bullet \frac{2}{10}$

12.  $\frac{4}{34} \bullet \frac{3}{17}$

13.  $\frac{11}{12} \bullet \frac{13}{16}$

14.  $\frac{2}{3} \bullet \frac{5}{9}$

15.  $\frac{13}{22} \bullet \frac{7}{11}$

**16. Population** The U.S. Census Bureau estimates that 10- to 19-year-olds are about  $\frac{3}{20}$  of the population, and 35- to 44-year-olds are about  $\frac{4}{25}$ .

Which age group represents more of the population?



**17. Standardized Test Practice** Order the fractions  $\frac{1}{7}$ ,  $\frac{2}{6}$ , and  $\frac{3}{8}$  from least to greatest.

**A**  $\frac{3}{8}, \frac{2}{6}, \frac{1}{7}$

**B**  $\frac{1}{7}, \frac{3}{8}, \frac{2}{6}$

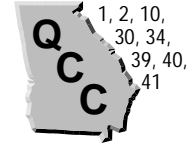
**C**  $\frac{2}{6}, \frac{1}{7}, \frac{3}{8}$

**D**  $\frac{1}{7}, \frac{2}{6}, \frac{3}{8}$

Answers: 1. 30 2.  $\frac{5}{2}$  3. 15 4. 14 5. 40 6. 8 7. = 8. < 9. = 10. > 11. = 12. < 13. > 14. > 15. < 16. 35–44 17. D

# Writing Decimals as Fractions

(pages 214–216)



A **terminating decimal** is a decimal whose digits end. For example, 21.4 is a terminating decimal, because the digits end. Every terminating decimal can be written as a fraction with a denominator of 10, 100, 1,000, and so on.

## EXAMPLES

**A** Express 0.5 as a fraction in simplest form.

0.5      The decimal 0.5 is read as, "five tenths."

$0.5 = \frac{5}{10}$       Write the decimal as the fraction "five tenths."

$= \frac{1}{2}$       Simplify. Divide the numerator and the denominator each by the GCF, 5.

**B** Express 2.25 as a mixed number in simplest form.

2.25      The decimal is read as "two and twenty-five hundredths."

$2.25 = 2\frac{25}{100}$       Write the decimal as the mixed number "two and twenty-five hundredths."

$= 2\frac{1}{4}$       Simplify. Divide the numerator and the denominator each by the GCF, 25.

## Try These Together

Express each decimal as a fraction or mixed number in simplest form.

1. 0.62

*HINT: Say the decimal aloud, and then write it as a fraction. Simplify the fraction.*

2. 12.84

*HINT: Say the decimal aloud and then write it as a mixed number. Simplify the mixed number.*

## PRACTICE

Express each decimal as a fraction or mixed number in simplest form.

3. 3.3

4. 2.15

5. 4.007

6. 1.78

7. 7.66

8. 4.1

9. 7.91

10. 8.02

11. 3.8

12. 0.08

13. 9.76

14. 4.03

15. 5.25

16. 0.034

17. 9.28

18. 3.48

**19. Fashion** A bottle of hairspray holds 8.45 fluid ounces. Express this as a mixed number in simplest form.



**20. Standardized Test Practice** Write two and forty-four hundredths as a mixed number in simplest form.

**A**  $2\frac{11}{25}$

**B**  $2\frac{44}{100}$

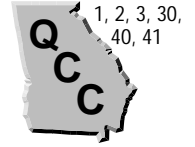
**C**  $2\frac{11}{250}$

**D**  $2\frac{22}{50}$

Answers: 1.  $\frac{50}{31}$  2.  $12\frac{21}{25}$  3.  $3\frac{10}{3}$  4.  $2\frac{20}{3}$  5.  $4\frac{1,000}{7}$  6.  $1\frac{39}{50}$  7.  $7\frac{33}{50}$  8.  $4\frac{10}{1}$  9.  $7\frac{100}{91}$  10.  $8\frac{50}{1}$  11.  $3\frac{5}{4}$  12.  $\frac{2}{25}$  13.  $9\frac{19}{25}$  14.  $4\frac{100}{3}$  15.  $5\frac{4}{17}$  16.  $\frac{500}{17}$  17.  $9\frac{25}{7}$  18.  $3\frac{12}{25}$  19.  $8\frac{20}{9}$  20. **A**

# Writing Fractions as Decimals

(pages 217–219)



Any fraction can be written as a decimal by using division.

<b>Writing a Fraction as a Decimal</b>	$\frac{4}{5}$ means $4 \div 5$ . Divide 4 by 5, and the quotient 0.8 is the decimal you want to find.
<b>Repeating Decimals</b>	Decimals like 0.333333 . . . are called <b>repeating decimals</b> because the digits repeat. <b>Bar notation</b> can be used to indicate that decimals repeat. $0.666666 . . . = 0.\overline{6}$ , $0.277777 . . . = 0.2\overline{7}$ , $0.737373 . . . = 0.\overline{73}$ Bar notation is useful because some fractions, when written as decimals, are repeating decimals. For example, $\frac{2}{3} = 0.\overline{6}$ .

## EXAMPLES

Express each fraction as a decimal. Use bar notation for repeating decimals.

**A**  $\frac{1}{5}$

$$\frac{1}{5} = 1 \div 5$$

$$\begin{array}{r} 0.2 \\ 5 \overline{) 1.0} \\ \underline{-10} \\ 0 \end{array}$$

Divide 1 by 5.

$$\begin{array}{r} 0.2 \\ 5 \overline{) 1.0} \\ \underline{-10} \\ 0 \end{array}$$

Therefore,  $\frac{1}{5} = 0.2$ .

**B**  $\frac{1}{3}$

$$\frac{1}{3} = 1 \div 3$$

$$\begin{array}{r} 0.33 \\ 3 \overline{) 1.00} \\ \underline{-9} \\ 10 \end{array}$$

Divide 1 by 3.

$$\begin{array}{r} 0.33 \\ 3 \overline{) 1.00} \\ \underline{-9} \\ 10 \end{array}$$

This pattern will keep on forever.

$$\begin{array}{r} 0.33 \\ 3 \overline{) 1.00} \\ \underline{-9} \\ 10 \end{array}$$

$\frac{1}{3}$  is a repeating decimal,  $0.\overline{3}$ .

## Try These Together

Express each fraction or mixed number as a decimal.

1.  $\frac{3}{4}$  HINT: Divide 3 by 4.

2.  $2\frac{1}{2}$  HINT: The whole number is written to the left of the decimal point.

## PRACTICE

Express each fraction or mixed number as a decimal. Use bar notation to show a repeating decimal.

3.  $4\frac{1}{8}$

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

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

6.  $\frac{2}{5}$

7.  $5\frac{11}{12}$

8.  $\frac{8}{11}$

9.  $\frac{8}{9}$

10.  $6\frac{3}{10}$



11. **Standardized Test Practice** Express  $2\frac{5}{12}$  as a decimal. Use bar notation if necessary.

A 2.4166

B  $2.41\overline{6}$

C  $2.\overline{146}$

D 2.41666

Answers: 1. 0.75 2. 2.5 3. 4.125 4. 0.16 5. 0.5 6. 0.4 7. 5.916 8. 0.72 9. 0.8 10. 6.3 11. B

# Chapter 5 Review

## Funny Money

Until recently, the prices of stocks sold on the New York Stock Exchange were listed as mixed numbers. For example, the price of a stock would be  $\$58\frac{1}{4}$  instead of  $\$58.25$ .

When you go to the corner store, you see prices displayed in dollars and cents, or in decimal form. Suppose you go to the corner store one day, and you see all of the prices displayed as fractions and decimals. Will you know how much to pay?

1. You go to the cooler for a soda. The price of the bottle is listed as  $\frac{4}{5}$  of a dollar. What is this price in dollars and cents?

2. You see a sign saying granola bars are on sale. The price is  $\$1\frac{2}{8}$ . If a candy bar costs  $\$1\frac{1}{5}$ , which bar is less expensive? How much is each bar in dollars and cents?

3. Draw lines to match the prices of the items in the left column with the prices in the right column. All prices have been rounded to the nearest cent.

banana (1)	$\frac{1}{8}$	\$1.40
paper towel (roll)	$1\frac{2}{5}$	\$0.30
one dozen eggs	$\frac{19}{20}$	\$0.13
hard candies (each)	$\frac{3}{10}$	\$0.95

4. One of your favorite snacks, bagels, used to sell for  $\$1.33$  each. What would they sell for now that the store uses fractional prices?

Answers are located on p. 109.