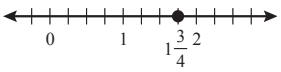
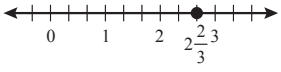
11. a. 

b. 

12. $\frac{94}{9}$ **13.** $\frac{32}{9}$ **14.** $8\frac{4}{11}$ **15.** $12\frac{5}{6}$

2.1 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

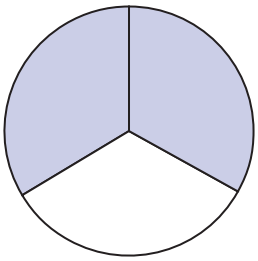
1. If a fraction has a numerator that is equal to or larger than the denominator, it is a/an _____ fraction.
2. A fraction that has a zero in the denominator is considered to be _____.
3. The sum of a whole number and a proper fraction is called a/an _____ number.
4. The first step in changing an improper fraction into a mixed number is to divide the _____ by the _____.

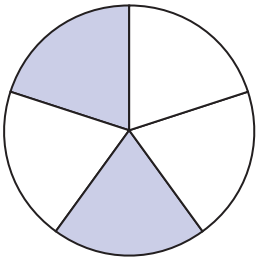
True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

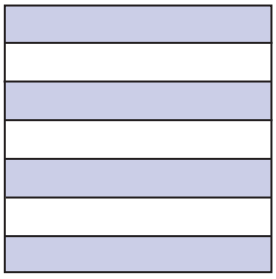
5. In $\frac{11}{13}$, the denominator is 11.
6. $\frac{0}{6} = 0$
7. $\frac{17}{0}$ is undefined.

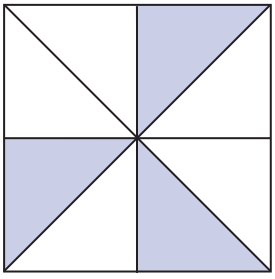
Practice

For each figure, write a fraction indicating **a.** the shaded part of the figure and **b.** the unshaded part of the figure. See Example 1.

1. 

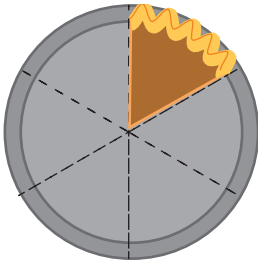
2. 

3. 

4. 

For each figure, write a fraction indicating **a.** the remaining portion of the object and **b.** the missing portion of the object. See Example 2.

5.



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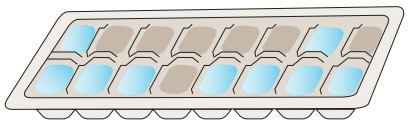
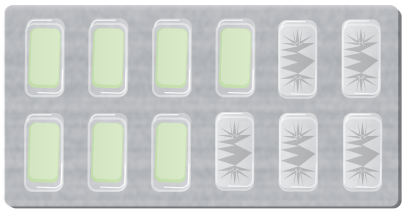


7.



8.

9.

June

S	M	T	W	T	F	S
~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~
~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~	~~14~~
~~15~~	~~16~~	~~17~~	~~18~~	~~19~~	~~20~~	~~21~~
~~22~~	~~23~~	24	25	26	27	28
29	30					

10.

~~oil~~	tomato sauce
~~milk~~	ginger ale
~~cheese~~	hamburger
carrots	ice cream
~~coffee~~	hand soap
crackers	

Draw a figure to represent each fraction. See Example 3.

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

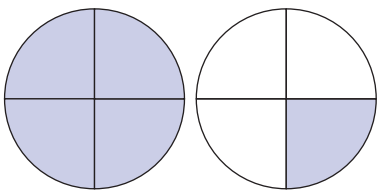
12. $\frac{1}{2}$

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

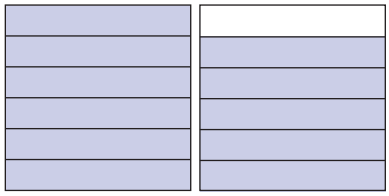
14. $\frac{3}{4}$

Write a fraction that indicates the shaded parts of each figure. See Example 4.

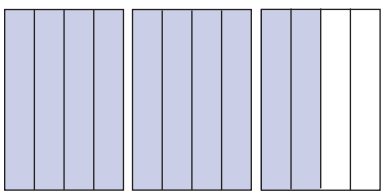
15.



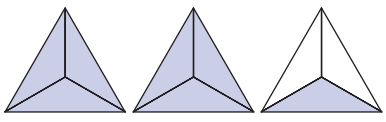
16.



17.



18.



Find the value of each expression. See Example 5.

19. $\frac{0}{6}$

20. $\frac{0}{35}$

21. $\frac{15}{0}$

22. $\frac{2}{0}$

Graph each fraction on a number line. See Examples 6 and 7.

23. $\frac{3}{5}$

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

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

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

Identify each number as a proper fraction, an improper fraction, or a mixed number. See Example 8.

27. $1\frac{1}{2}$

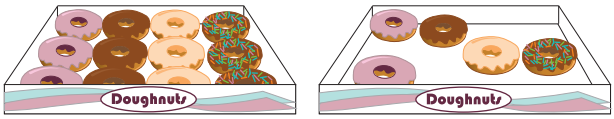
28. $\frac{5}{3}$

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

30. $7\frac{5}{12}$

Write each amount described as **a.** a mixed number and **b.** an improper fraction. See Example 9.

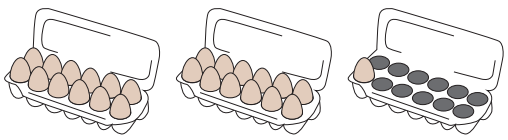
31. Isabella brought 2 boxes of doughnuts to a meeting. The figure shows the remaining amount of doughnuts.



32. A recipe calls for the amount of tomato juice indicated in the figure.

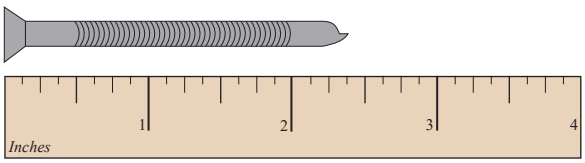
33. Shane has two blister packs of gum. The figure shows the remaining amount of gum.

34. Cassandra has the following eggs in her refrigerator.

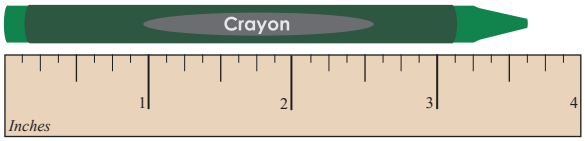


Write a mixed number to describe the length indicated in each figure. See Example 10.

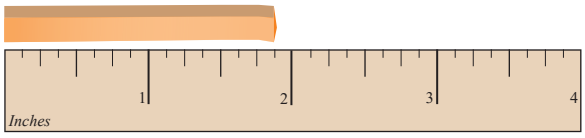
35.



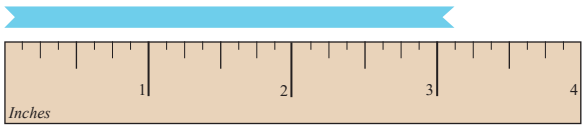
36.



37.



38.



Graph each mixed number on a number line. See Example 11.

39. $1\frac{1}{3}$ **40.** $3\frac{1}{4}$ **41.** $2\frac{2}{5}$ **42.** $1\frac{3}{8}$

Change each mixed number to an improper fraction. See Examples 12 and 13.

43. $1\frac{3}{5}$ **47.** $6\frac{8}{10}$ **51.** $4\frac{6}{7}$ **55.** $10\frac{8}{12}$

44. $1\frac{2}{3}$ **48.** $9\frac{4}{10}$ **52.** $7\frac{1}{7}$ **56.** $3\frac{1}{50}$

45. $2\frac{1}{4}$ **49.** $4\frac{5}{8}$ **53.** $1\frac{2}{15}$ **57.** $7\frac{1}{100}$

46. $4\frac{3}{4}$ **50.** $6\frac{4}{8}$ **54.** $1\frac{3}{17}$ **58.** $6\frac{19}{100}$

Change each improper fraction to a mixed number. See Examples 14 and 15.

59. $\frac{4}{3}$ **63.** $\frac{5}{2}$ **67.** $\frac{37}{8}$ **71.** $\frac{35}{20}$

60. $\frac{11}{8}$ **64.** $\frac{17}{8}$ **68.** $\frac{29}{6}$ **72.** $\frac{14}{5}$

61. $\frac{13}{2}$ **65.** $\frac{27}{10}$ **69.** $\frac{36}{12}$ **73.** $\frac{185}{100}$

62. $\frac{19}{4}$ **66.** $\frac{33}{10}$ **70.** $\frac{48}{16}$ **74.** $\frac{329}{100}$

Applications

Solve.

75. If you had $20 and you spent $9 for a hamburger, fries, and a soft drink, what fraction of your money did you spend? What fraction would you still have?

76. In a class of 35 students, 6 students received As on a mathematics exam. What fraction of students received an A? What fraction of students did not receive an A?

77. A software company receives 45 technical support calls in one hour. Twenty-three of the calls are related to customers forgetting their passwords. What fraction of the calls was related to customers forgetting their passwords?

78. A certain brand of plain bagels has 146 calories per bagel. In each bagel, 115 calories come from carbohydrates. What fraction of the calories is from carbohydrates?

79. What fraction of a minute does 43 seconds represent? (**Hint:** There are 60 seconds in a minute.)

80. There are 5280 feet in a mile. What fraction of a mile does 923 feet represent?

81. A computer stores data on a hard drive in the form of bits, bytes, and sectors.

a. Each byte is made up of eight bits. What fraction of a byte is a bit?

b. A sector on a hard drive is traditionally 512 bytes. A byte is what fraction of a sector?

c. If a computer stores 159 bytes of data, what fraction of a sector does that amount of data take up?

82. The gas tank of a car holds 14 gallons of gas. What fraction of the tank does 9 gallons of gas take up?

83. A small box will hold 12 books. Kathleen has 35 books to pack into small boxes.

a. Write an improper fraction to describe the number of boxes that will be filled by Kathleen's books.

b. Change the improper fraction from part a. to a mixed number to describe the number of boxes that will be filled by Kathleen's books.

84. A cup holds 8 ounces of liquid. You have 29 ounces of juice to pour into cups.

a. Write an improper fraction to describe the number of cups that will be filled with juice.

b. Change the improper fraction from part a. to a mixed number to describe the number of cups that will be filled with juice.

Writing & Thinking

85. In your own words, list the parts of a fraction and briefly describe the purpose of each part.

86. Give an example of a situation where you might use fractions and/or mixed numbers outside of class.

87. Show and explain, using diagrams and words, why $2\frac{3}{5} = \frac{13}{5}$.

88. Explain how to change an improper fraction into a mixed number.