

Practice Exercises:

In exercises 1 - 5 odd, convert each mixed number to an improper fraction.

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

5. $8\frac{7}{16}$

3. $7\frac{3}{5}$

In exercises 7 - 11 odd, convert each improper fraction to a mixed number.

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

11. $\frac{711}{20}$

9. $\frac{76}{9}$

In exercises 13 - 27 odd, identify each natural number as prime or composite. If the number is composite, find its prime factorization.

13. 22

21. 140

15. 20

23. 79

17. 37

25. 81

19. 36

27. 240

In exercises 29 - 39 odd, simplify each fraction by reducing it to its lowest terms.

29. $\frac{10}{16}$

35. $\frac{32}{80}$

31. $\frac{15}{18}$

37. $\frac{44}{50}$

33. $\frac{35}{50}$

39. $\frac{120}{86}$

In exercises 41 - 89 odd, perform the indicated operation. Where possible, reduce the answer to its lowest terms.

41. $\frac{2}{5} \cdot \frac{1}{3}$

57. $2 \div \frac{18}{5}$

43. $\frac{3}{8} \cdot \frac{7}{11}$

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

45. $9 \cdot \frac{4}{7}$

61. $\frac{7}{6} \div \frac{5}{3}$

47. $\frac{1}{10} \cdot \frac{5}{6}$

63. $\frac{1}{14} \div \frac{1}{7}$

49. $\frac{5}{4} \cdot \frac{6}{7}$

65. $6\frac{3}{5} \div 1\frac{1}{10}$

51. $(3\frac{3}{4})(1\frac{3}{5})$

67. $\frac{2}{11} + \frac{4}{11}$

53. $\frac{5}{4} \div \frac{4}{3}$

69. $\frac{7}{12} + \frac{1}{12}$

55. $\frac{18}{5} \div 2$

71. $\frac{5}{8} + \frac{5}{8}$

73. $\frac{7}{12} - \frac{5}{12}$

83. $\frac{11}{18} - \frac{2}{9}$

75. $\frac{16}{7} - \frac{2}{7}$

85. $\frac{4}{3} - \frac{3}{4}$

77. $\frac{1}{2} + \frac{1}{5}$

87. $\frac{7}{10} - \frac{3}{16}$

79. $\frac{3}{4} + \frac{3}{20}$

89. $3\frac{3}{4} - 2\frac{1}{3}$

81. $\frac{3}{8} + \frac{5}{12}$

In exercises 91 - 101 odd, determine whether the given number is a solution of the equation.

91. $\frac{7}{2}x = 28$; 8

97. $\frac{2}{9}y + \frac{1}{3}y = \frac{3}{7}$; $\frac{27}{35}$

93. $w - \frac{2}{3} = \frac{3}{4}$; $1\frac{5}{12}$

99. $\frac{1}{3}(x - 2) = \frac{1}{5}(x + 4) + 3$; 26

95. $20 - \frac{1}{3}z = \frac{1}{2}z$; 12

101. $(y \div 6) + \frac{2}{3} = (y \div 2) - \frac{7}{9}$; $4\frac{1}{3}$

In exercises 103 - 113 odd, translate from English to an algebraic expression or equation, whichever is appropriate. Let the variable x represent the number.

103. $\frac{1}{5}$ of a number

109. The sum of $\frac{1}{7}$ of a number and $\frac{1}{8}$ of that number gives 12.

105. A number decreased by $\frac{1}{4}$ of itself

111. The product of $\frac{2}{3}$ and a number increased by 6

107. A number decreased by $\frac{1}{4}$ is half of that number.

113. The product of $\frac{2}{3}$ and a number, increased by 6, is 3 less than the number.

Applications:

The formula

$$C = \frac{5}{9}(F - 32)$$

expresses the relationship between Fahrenheit temperature, F , and Celsius temperature, C .

123. 68°

The graph on page 31 shows the average number of holiday presents bought by U.S. shoppers from 2007 through 2010. The model

$$P = 23\frac{1}{5} - 2\frac{1}{5}n$$

expresses the average number of holiday presents, P , given the number of years, n , after 2007.

129. Use the formula to find the average number of holiday presents bought by U.S. shoppers in 2008. Does the mathematical model underestimate or overestimate the actual number shown in the bar graph for 2008? By how much?