

Chapter 2 Introduction to Real Numbers and Algebraic Expressions

Section 2.1_Fractions_Practice Problems

1. (a) product
 (b) factors
 (c) numerator; b
 (d) lowest
 (e) 1; 4
 (f) reciprocals
 (g) multiple
 (h) least
3. Numerator 2; denominator 3; proper
5. Numerator 5; denominator 2; improper
7. Numerator 4; denominator 4; improper
9. Numerator 5; denominator 1; improper
11. $\frac{3}{4}$
13. $\frac{4}{3}$
15. $\frac{1}{6}$
17. $\frac{2}{2}$
19. $\frac{5}{2}$ or $2\frac{1}{2}$
21. $\frac{6}{2}$ or 3
23. The set of whole numbers includes the number 0 and the set of natural numbers does not.
25. Answers may vary. One example would be $\frac{2}{4}$.
27. Prime
29. Composite
31. Composite
33. Prime
35. $2 \times 2 \times 3 \times 3$
37. $2 \times 3 \times 7$
39. $2 \times 5 \times 11$
41. $3 \times 3 \times 3 \times 5$
43. $\frac{3}{15} = \frac{\cancel{3}}{\cancel{3} \times 5} = \frac{1}{5}$
45. $\frac{16}{6} = \frac{\cancel{2} \times 2 \times 2 \times 2}{\cancel{2} \times 3} = \frac{8}{3}$ or $2\frac{2}{3}$
47. $\frac{42}{48} = \frac{\cancel{2} \times \cancel{3} \times 7}{\cancel{2} \times 2 \times 2 \times 2 \times \cancel{3}} = \frac{7}{8}$
49. $\frac{48}{64} = \frac{\cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 3}{\cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2 \times 2} = \frac{3}{4}$
51. $\frac{110}{176} = \frac{\cancel{2} \times 5 \times \cancel{11}}{\cancel{2} \times 2 \times 2 \times 2 \times \cancel{11}} = \frac{5}{8}$
53. $\frac{200}{150} = \frac{\cancel{2} \times 2 \times 2 \times \cancel{5} \times \cancel{5}}{\cancel{2} \times 3 \times \cancel{5} \times \cancel{5}} = \frac{4}{3}$ or $1\frac{1}{3}$
55. False: When adding/subtracting fractions, it is necessary to have a common denominator.
57. $\frac{10}{13} \times \frac{26}{15} = \frac{2 \times 2 \times \cancel{5} \times \cancel{13}}{3 \times \cancel{5} \times \cancel{13}} = \frac{4}{3}$ or $1\frac{1}{3}$
59. $\frac{3}{7} \div \frac{9}{14} = \frac{3}{7} \times \frac{14}{9} = \frac{2 \times \cancel{3} \times \cancel{7}}{3 \times \cancel{3} \times \cancel{7}} = \frac{2}{3}$
61. $\frac{9}{10} \times 5 = \frac{9}{10} \times \frac{5}{1} = \frac{3 \times 3 \times \cancel{5}}{2 \times \cancel{5}} = \frac{9}{2}$ or $4\frac{1}{2}$
63. $\frac{12}{5} \div 4 = \frac{12}{5} \div \frac{4}{1} = \frac{12}{5} \times \frac{1}{4}$
 $= \frac{\cancel{12}^3 \times 1}{5 \times \cancel{4}_1} = \frac{3}{5}$

$$65. \frac{5}{2} \times \frac{10}{21} \times \frac{7}{5} = \frac{\cancel{5}^1 \times \cancel{10}^5 \times \cancel{7}^1}{\cancel{2}_1 \times \cancel{21}_3 \times \cancel{5}_1} = \frac{5}{3} \text{ or } 1\frac{2}{3}$$

$$67. \frac{9}{100} \div \frac{13}{1000} = \frac{9}{100} \times \frac{1000}{13} \\ = \frac{9 \times \cancel{1000}^{10}}{\cancel{100}_1 \times 13} = \frac{90}{13} \text{ or } 6\frac{12}{13}$$

$$69. \frac{1}{3} \text{ of } \$2112 = \frac{1}{3} \times \frac{2112}{1} = \frac{2112}{3} = \$704$$

71. The statement "five-sixths of the students passed the first test" translates to "students passed = $\frac{5}{6} \times 42$ "

$$\frac{5}{6} \times 42 = \frac{5}{6} \times \frac{42}{1} = \frac{5 \times \cancel{42}^7}{\cancel{6} \times 1} = \frac{35}{1}$$

35 students passed the test.

$$73. 4 \text{ yd} \div \frac{1}{2} \text{ yd} = \frac{4}{1} \times \frac{2}{1} = \frac{8}{1} = 8, 8 \text{ pieces}$$

$$75. 6 \text{ lb} \div \frac{3}{4} \text{ lb} = \frac{6}{1} \times \frac{4}{3} = \frac{24}{3} = 8, 8 \text{ jars}$$

$$77. \frac{5}{14} + \frac{1}{14} = \frac{6}{14} = \frac{\cancel{2} \times 3}{\cancel{2} \times 7} = \frac{3}{7}$$

$$79. \frac{17}{24} - \frac{5}{24} = \frac{12}{24} \\ = \frac{1}{2}$$

$$81. 6 = 2 \times 3$$

$$15 = 3 \times 5$$

$$2 \times 3 \times 5 = 30$$

$$83. 20 = 2^2 \times 5$$

$$8 = 2^3$$

$$4 = 2^2$$

$$2^3 \times 5 = 40$$

$$85. \frac{1}{8} + \frac{3}{4} = \frac{1}{8} + \frac{6}{8} = \frac{7}{8}$$

$$87. \frac{11}{8} - \frac{3}{10} = \frac{55}{40} - \frac{12}{40} = \frac{43}{40} \text{ or } 1\frac{3}{40}$$

$$89. \frac{7}{26} - \frac{2}{13} = \frac{7}{26} - \frac{4}{26} = \frac{3}{26}$$

$$91. \frac{7}{18} + \frac{5}{12} = \frac{14}{36} + \frac{15}{36} = \frac{29}{36}$$

$$93. \frac{5}{4} - \frac{1}{20} = \frac{25}{20} - \frac{1}{20} = \frac{24}{20} = \frac{6}{5} \text{ or } 1\frac{1}{5}$$

$$95. \frac{5}{12} + \frac{5}{16} = \frac{20}{48} + \frac{15}{48} = \frac{35}{48}$$

$$97. \frac{1}{6} + \frac{3}{4} - \frac{5}{8} = \frac{4}{24} + \frac{18}{24} - \frac{15}{24} = \frac{7}{24}$$

$$99. \frac{4}{7} + \frac{1}{2} + \frac{3}{4} = \frac{16}{28} + \frac{14}{28} + \frac{21}{28} = \frac{51}{28} \text{ or } 1\frac{23}{28}$$

$$101. \frac{2}{3} + \frac{1}{4} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}, \frac{11}{12} \text{ cup sugar}$$

$$103. \frac{1}{2} - \frac{9}{25} = \frac{25}{50} - \frac{18}{50} = \frac{7}{50}, \frac{7}{50} \text{ in.}$$

$$105. 3\frac{1}{5} \times 2\frac{7}{8} = \frac{16}{5} \times \frac{23}{8} \\ = \frac{\cancel{16}^2 \times 23}{5 \times \cancel{8}} = \frac{46}{5} \text{ or } 9\frac{1}{5}$$

$$107. 1\frac{2}{9} \div 7\frac{1}{3} = \frac{11}{9} \div \frac{22}{3} = \frac{\cancel{11}}{9} \times \frac{\cancel{3}}{\cancel{22}_2} = \frac{1}{6}$$

$$109. 1\frac{2}{9} \div 6 = \frac{11}{9} \times \frac{1}{6} = \frac{11}{9 \times 6} \\ = \frac{11}{54}$$

$$111. 2\frac{1}{8} + 1\frac{3}{8} = \frac{17}{8} + \frac{11}{8} = \frac{28}{8} \\ = \frac{\cancel{2} \times \cancel{2} \times 7}{\cancel{2} \times \cancel{2} \times 2} \\ = \frac{7}{2} \text{ or } 3\frac{1}{2}$$

$$113. 3\frac{1}{2} - 1\frac{7}{8} = \frac{7}{2} - \frac{15}{8} = \frac{28}{8} - \frac{15}{8} \\ = \frac{13}{8} \text{ or } 1\frac{5}{8}$$

$$115. 1\frac{1}{6} + 3\frac{3}{4} = \frac{7}{6} + \frac{15}{4} \\ = \frac{14}{12} + \frac{45}{12} = \frac{59}{12} \text{ or } 4\frac{11}{12}$$

$$117. 1 - \frac{7}{8} = \frac{8}{8} - \frac{7}{8} = \frac{1}{8}$$

$$119. 26\frac{3}{8} \div 3 = \frac{211}{8} \div \frac{3}{1} \\ = \frac{211}{8} \times \frac{1}{3} = \frac{211}{24} = 8\frac{19}{24} \text{ in.}$$

$$121. 2\frac{3}{4} - 1\frac{1}{6} = \frac{11}{4} - \frac{7}{6} = \frac{33}{12} - \frac{14}{12} \\ = \frac{19}{12} = 1\frac{7}{12} \text{ hr}$$

$$123. 1\frac{1}{2} + \frac{3}{4} = \frac{3}{2} + \frac{3}{4} = \frac{6}{4} + \frac{3}{4} \\ = \frac{9}{4}$$

$$= 2\frac{1}{4} \text{ lb}$$

$$125. 6\frac{1}{4} \times 4 = \frac{25}{4} \times \frac{4}{1} = \frac{25}{\cancel{4}} \times \frac{\cancel{4}}{1} \\ = 25 \text{ in.}$$