

23A

- 1) done
- 2) $\frac{3}{4} \times \frac{4}{3} = \frac{12}{12} = 1$
- 3) $\frac{1}{2} \times \frac{2}{1} = \frac{2}{2} = 1$
- 4) done
- 5) done
- 6) $\frac{8}{7}$
- 7) done
- 8) done
- 9) $\frac{3}{4} \times \frac{8}{5} = \frac{24}{20} = 1\frac{4}{20} = 1\frac{1}{5}$
- 10) $\frac{24}{32} \div \frac{20}{32} = \frac{24}{20} = 1\frac{4}{20} = 1\frac{1}{5}$
- 11) $\frac{9}{10} \times \frac{5}{1} = \frac{45}{10} = \frac{9}{2} = 4\frac{1}{2}$
- 12) $\frac{45}{50} \div \frac{10}{50} = \frac{45}{10} = \frac{9}{2} = 4\frac{1}{2}$
- 13) done
- 14) done
- 15) $\frac{11}{6} \div \frac{13}{4} = \frac{11}{6} \times \frac{4}{13} = \frac{44}{78} = \frac{22}{39}$
- 16) $\frac{15}{8} \div \frac{5}{8} = \frac{15}{8} \times \frac{8}{5} = \frac{120}{40} = 3$
- 17) $\frac{5}{3} \div \frac{5}{9} = \frac{5}{3} \times \frac{9}{5} = \frac{45}{15} = \frac{9}{3} = 3\text{mi}$
- 18) $\frac{8}{3} \div \frac{1}{6} = \frac{8}{3} \times \frac{6}{1} = \frac{48}{3} = 16$

23B

- 1) $\frac{1}{3} \times \frac{3}{1} = \frac{3}{3} = 1$
- 2) $\frac{5}{8} \times \frac{8}{5} = \frac{40}{40} = 1$
- 3) $\frac{3}{7} \times \frac{7}{3} = \frac{21}{21} = 1$
- 4) $\frac{2}{1}$ or 2
- 5) $\frac{1}{9}$
- 6) $\frac{4}{3}$
- 7) $\frac{4}{1} \times \frac{2}{1} = \frac{8}{1} = 8$
- 8) $\frac{8}{2} \div \frac{1}{2} = \frac{8 \div 1}{1} = 8$
- 9) $\frac{7}{10} \times \frac{12}{7} = \frac{84}{70} = 1\frac{14}{70} = 1\frac{1}{5}$
- 10) $\frac{84}{120} \div \frac{70}{120} = \frac{84}{70} = 1\frac{14}{70} = 1\frac{1}{5}$
- 11) $\frac{3}{4} \times \frac{8}{1} = \frac{24}{4} = 6$
- 12) $\frac{24}{32} \div \frac{4}{32} = \frac{24 \div 4}{1} = 6$
- 13) $\frac{38}{5} \div \frac{3}{2} = \frac{38}{5} \times \frac{2}{3} = \frac{76}{15} = 5\frac{1}{15}$
- 14) $\frac{13}{4} \div \frac{74}{7} = \frac{13}{4} \times \frac{7}{74} = \frac{91}{296}$
- 15) $\frac{3}{2} \div \frac{1}{8} = \frac{3}{2} \times \frac{8}{1} = \frac{24}{2} = 12$
- 16) $\frac{13}{6} \div \frac{1}{6} = \frac{13}{6} \times \frac{6}{1} = \frac{78}{6} = 13$
- 17) $\frac{6}{5} \div \frac{9}{10} = \frac{6}{5} \times \frac{10}{9} = \frac{60}{45} = \frac{4}{3} = 1\frac{1}{3}$ ft.
- 18) $\frac{5}{1} \div \frac{5}{4} = \frac{5}{1} \times \frac{4}{5} = \frac{20}{5} = 4$

23C

- 1) $\frac{1}{6} \times \frac{6}{1} = \frac{6}{6} = 1$
- 2) $\frac{2}{3} \times \frac{3}{2} = \frac{6}{6} = 1$
- 3) $\frac{4}{5} \times \frac{5}{4} = \frac{20}{20} = 1$
- 4) $\frac{6}{5}$
- 5) $\frac{1}{13}$
- 6) $\frac{4}{9}$
- 7) $\frac{5}{7} \times \frac{9}{2} = \frac{45}{14} = 3\frac{3}{14}$
- 8) $\frac{45}{63} \div \frac{14}{63} = \frac{45 \div 14}{1} = \frac{45}{14} = 3\frac{3}{14}$
- 9) $\frac{7}{8} \times \frac{3}{1} = \frac{21}{8} = 2\frac{5}{8}$
- 10) $\frac{21}{24} \div \frac{8}{24} = \frac{21 \div 8}{1} = \frac{21}{8} = 2\frac{5}{8}$
- 11) $\frac{2}{1} \times \frac{3}{2} = \frac{6}{2} = 3$
- 12) $\frac{6}{3} \div \frac{2}{3} = \frac{6 \div 2}{1} = 3$
- 13) $\frac{8}{3} \div \frac{11}{8} = \frac{8}{3} \times \frac{8}{11} = \frac{64}{33} = 1\frac{31}{33}$
- 14) $\frac{16}{3} \div \frac{8}{3} = \frac{16}{3} \times \frac{3}{8} = \frac{48}{24} = 2$
- 15) $\frac{14}{5} \div \frac{1}{10} = \frac{14}{5} \times \frac{10}{1} = \frac{140}{5} = 28$
- 16) $\frac{7}{4} \div \frac{5}{12} = \frac{7}{4} \times \frac{12}{5} = \frac{84}{20} = 4\frac{4}{20} = 4\frac{1}{5}$
- 17) $\frac{5}{2} \div \frac{1}{2} = \frac{5}{2} \times \frac{2}{1} = \frac{10}{2} = 5$
- 18) $\frac{25}{4} \div \frac{5}{1} = \frac{25}{4} \times \frac{1}{5} = \frac{25}{20} = 1\frac{5}{20} = 1\frac{1}{4}$ yds.

23D

- 1) $\frac{1}{3} \times \frac{5}{1} = \frac{5}{3} = 1\frac{2}{3}$
- 2) $\frac{5}{15} \div \frac{3}{15} = \frac{5 \div 3}{1} = \frac{5}{3} = 1\frac{2}{3}$
- 3) $\frac{3}{4} \times \frac{8}{5} = \frac{24}{20} = \frac{6}{5} = 1\frac{1}{5}$
- 4) $\frac{24}{32} \div \frac{20}{32} = \frac{24 \div 20}{1} = \frac{24}{20} = \frac{6}{5} = 1\frac{1}{5}$
- 5) $\frac{9}{4} \div \frac{3}{5} = \frac{9}{4} \times \frac{5}{3} = \frac{45}{12} = \frac{15}{4} = 3\frac{3}{4}$
- 6) $\frac{11}{6} \div \frac{21}{10} = \frac{11}{6} \times \frac{10}{21} = \frac{110}{126} = \frac{55}{63}$
- 7) $9\frac{5}{30} - 4\frac{12}{30} = 8\frac{35}{30} - 4\frac{12}{30} = 4\frac{23}{30}$
- 8) $24\frac{4}{3} - 16\frac{2}{3} = 8\frac{2}{3}$
- 9) $7\frac{20}{32} + 2\frac{8}{32} = 9\frac{28}{32} = 9\frac{7}{8}$
- 10) done
- 11) done
- 12) $25 \div 16 = 1\frac{9}{16}$ lbs.
- 13) $10 \times 16 = 160$ oz.
- 14) $\frac{35}{6} \div \frac{7}{6} = \frac{35}{6} \times \frac{6}{7} = \frac{210}{42} = 5$
- 15) $5\frac{4}{8} + 4\frac{6}{8} = 9\frac{10}{8}$
 $9\frac{10}{8} - 6\frac{3}{8} = 3\frac{7}{8}$ lbs.
- 16) $8 \times 4 \times 2 = 64$ cu. ft.
- 17) $\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$
 $1 + \frac{3}{4} = 1\frac{3}{4}$ ft.
- 18) 49

23E

- 1) $\frac{2}{3} \div \frac{5}{7} = \frac{2}{3} \times \frac{7}{5} = \frac{14}{15}$
- 2) $\frac{14}{21} \div \frac{15}{21} = \frac{14 \div 15}{1} = \frac{14}{15}$
- 3) $\frac{9}{10} \div \frac{1}{5} = \frac{9}{10} \times \frac{5}{1} = \frac{45}{10} = \frac{9}{2} = 4\frac{1}{2}$
- 4) $\frac{45}{50} \div \frac{10}{50} = \frac{45 \div 10}{1} = \frac{45}{10} = \frac{9}{2} = 4\frac{1}{2}$
- 5) $\frac{23}{5} \div \frac{17}{7} = \frac{23}{5} \times \frac{7}{17} = \frac{161}{85} = 1\frac{76}{85}$
- 6) $\frac{9}{5} \div \frac{4}{3} = \frac{9}{5} \times \frac{3}{4} = \frac{27}{20} = 1\frac{7}{20}$
- 7) $4\frac{6}{8} - 1\frac{4}{8} = 3\frac{2}{8} = 3\frac{1}{4}$
- 8) $13\frac{6}{21} - 11\frac{7}{21} = 12\frac{27}{21} - 11\frac{7}{21} = 1\frac{20}{21}$
- 9) $3\frac{1}{3} + 2\frac{2}{3} = 5\frac{3}{3} = 6$
- 10) $\frac{15}{20} + \frac{12}{20} = \frac{27}{20}$
 $\frac{27}{20} + \frac{6}{10} = \frac{270}{200} + \frac{120}{200} = \frac{390}{200} = \frac{39}{20} = 1\frac{19}{20}$
- 11) $\frac{7}{21} + \frac{15}{21} = \frac{22}{21}$
 $\frac{22}{21} + \frac{2}{5} = \frac{110}{105} + \frac{42}{105} = \frac{152}{105} = 1\frac{47}{105}$
- 12) $\frac{3}{6} + \frac{4}{6} = \frac{7}{6}$
 $\frac{7}{6} + \frac{4}{7} = \frac{49}{42} + \frac{24}{42} = \frac{73}{42} = 1\frac{31}{42}$
- 13) $64 \div 16 = 4$ lbs.
- 14) $6 \times 16 = 96$ oz.
- 15) $13 \div 4 = 3\frac{1}{4}$ gal.
- 16) $1/2 \times 20 \times 5 = 50$ sq. ft.
- 17) $10\frac{1}{2} + 7\frac{1}{2} = 17\frac{2}{2} = 18$ ft; $18 \div 3 = 6$ yds.
- 18) $\frac{93}{10} \div \frac{12}{5} = \frac{93}{10} \times \frac{5}{12} = \frac{465}{120} = 3\frac{105}{120} = 3\frac{7}{8}$ ft.
- 19) $7 \times 7 \times 7 = 343$ cu. ft.
- 20) 44

23F

- 1) $\frac{5}{9} \div \frac{2}{3} = \frac{5}{9} \times \frac{3}{2} = \frac{15}{18} = \frac{5}{6}$
- 2) $\frac{15}{27} \div \frac{18}{27} = \frac{15 \div 18}{1} = \frac{15}{18} = \frac{5}{6}$
- 3) $\frac{1}{2} \div \frac{1}{3} = \frac{1}{2} \times \frac{3}{1} = \frac{3}{2} = 1\frac{1}{2}$
- 4) $\frac{3}{6} \div \frac{2}{6} = \frac{3 \div 2}{1} = \frac{3}{2} = 1\frac{1}{2}$
- 5) $\frac{11}{4} \div \frac{5}{8} = \frac{11}{4} \times \frac{8}{5} = \frac{88}{20} = 4\frac{8}{20} = 4\frac{2}{5}$
- 6) $\frac{12}{5} \div \frac{7}{6} = \frac{12}{5} \times \frac{6}{7} = \frac{72}{35} = 2\frac{2}{35}$
- 7) $11\frac{8}{7} - 6\frac{4}{7} = 5\frac{4}{7}$
- 8) $3\frac{2}{16} - 2\frac{8}{16} = 2\frac{18}{16} - 2\frac{8}{16} = \frac{10}{16} = \frac{5}{8}$
- 9) $5\frac{5}{50} + 2\frac{20}{50} = 7\frac{25}{50} = 7\frac{1}{2}$
- 10) $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$
- 11) $\frac{1}{8} = \frac{2}{16} = \frac{3}{24}$
- 12) $\frac{7}{10} = \frac{14}{20} = \frac{21}{30}$
- 13) $21 \div 16 = \frac{21}{16} = 1\frac{5}{16}$ lbs.
- 14) $14 \div 2 = 7$ qts.
- 15) $25 \times 3 = 75$ ft.
- 16) $\frac{15}{4} \div \frac{5}{1} = \frac{15}{4} \times \frac{1}{5} = \frac{15}{20} = \frac{3}{4}$ lb.
- 17) $14 \times 11 \times 9 = 1,386$ cu. ft.
- 18) $1/10$
- 19) $3/4$ of 20 = 15 gal. used
 $20 - 15 = 5$ gal. left
 $5 \times 4 = 20$ qts. left
- 20) 50

24A

- 1) done
- 2) done
- 3) $\frac{10}{9}$
- 4) $\frac{1}{7}$
- 5) done
- 6) done
- 7) $\frac{1}{8} \cdot 8A = 40 \cdot \frac{1}{8}$
 $A = 5$
- 8) $8(5) = 40$
 $40 = 40$
- 9) $\frac{1}{3} \cdot 3D = 27 \cdot \frac{1}{3}$
 $D = 9$
- 10) $3(9) = 27$
 $27 = 27$
- 11) $\frac{1}{11} \cdot 11Y = 121 \cdot \frac{1}{11}$
 $Y = 11$
- 12) $11(11) = 121$
 $121 = 121$
- 13) $\frac{1}{3} \cdot 3R = 12 \cdot \frac{1}{3}$
 $R = 4$
- 14) $\frac{1}{4} \cdot 4D = 48 \cdot \frac{1}{4}$
 $D = \$12$

24B

- 1) $\frac{3}{2}$
- 2) $\frac{1}{10}$
- 3) $\frac{8}{1} = 8$
- 4) $\frac{1}{2}$
- 5) $\frac{1}{8} \cdot 8Z = 72 \cdot \frac{1}{8}$
 $Z = 9$
- 6) $8(9) = 72$
 $72 = 72$
- 7) $\frac{1}{10} \cdot 10C = 100 \cdot \frac{1}{10}$
 $C = 10$
- 8) $10(10) = 100$
 $100 = 100$
- 9) $\frac{1}{5} \cdot 5F = 25 \cdot \frac{1}{5}$
 $F = 5$
- 10) $5(5) = 25$
 $25 = 25$
- 11) $\frac{1}{2} \cdot 2A = 6 \cdot \frac{1}{2}$
 $A = 3$
- 12) $2(3) = 6$
 $6 = 6$
- 13) $\frac{1}{2} \cdot 2A = 12 \cdot \frac{1}{2}$
 $A = 6$
- 14) $\frac{1}{5} \cdot 5B = 15 \cdot \frac{1}{5}$
 $B = 3$