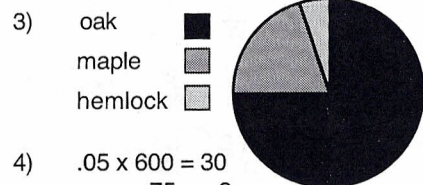


14F

$$\begin{array}{r} 1) \quad \begin{array}{r} 567 \\ \times 148 \\ \hline 4536 \\ 2268 \\ 567 \\ \hline 83916 \end{array} \end{array}$$

Estimated: $.6 \times .1 = .06$

$$\begin{array}{r} 2) \quad \begin{array}{r} 1905 \\ \times 1321 \\ \hline 1905 \\ 3810 \\ 5715 \\ 1905 \\ \hline 2516505 \end{array} \end{array}$$

Estimated: $2 \times 1 = 2$ 

- 4) $.05 \times 600 = 30$
 5) $.75 = \frac{75}{100} = \frac{3}{4}$
 6) $.45 = \frac{45}{100} = \frac{9}{20}$
 7) $1.25 = \frac{125}{100} = 1\frac{25}{100} = 1\frac{1}{4}$
 8) $.01 = \frac{1}{100}$
 9) $\frac{700}{100} + \frac{20}{100} = \frac{720}{100} = 720\% = 7.20$
 10) 35,000
 11) 1,100
 12) 500
 13) $\frac{2}{5} \times \frac{8}{3} = \frac{16}{15} = 1\frac{1}{15}$
 14) $\frac{24}{5} \times \frac{3}{2} = \frac{6}{5} = 1\frac{1}{5}$
 15) $\frac{3}{4} \times \frac{4}{3} = \frac{12}{12} = 1$
 16) $.15 \times 900 = 135$
 17) $\$9 \times 1.10 = \9.90
 18) $90 \times .4 = 36$ inches
 19) $5.725 \times .10 = .5725$ of a ton
 20) $.5725 \times 2,000 = 1,145$ pounds

15A

- 1) done
 2) done
 3) 7.5
 4) .014
 5) .4
 6) 5.3
 7) 1.3
 8) .48
 9) .07
 10) .000609
 11) .5
 12) 1.2

15B

- 1) 30
 2) 5
 3) 10
 4) .25
 5) .18
 6) .45
 7) .5
 8) 80
 9) 8.3
 10) .008
 11) 1.02
 12) .01

15C

- 1) .015
 2) 8
 3) 1
 4) .25
 5) 30
 6) .034
 7) .99
 8) 7.3
 9) 15
 10) 50
 11) 45.638 g
 12) 300 kg

15D

$$\begin{array}{r} 1) .45 \\ 2) 60 \\ 3) 100 \\ 4) \quad \begin{array}{r} 621 \\ \times 543 \\ \hline 1863 \\ 2484 \\ 3105 \\ \hline 337203 \end{array} \end{array}$$

Estimated: $.6 \times .5 = .30$

$$\begin{array}{r} 5) \quad \begin{array}{r} 2728 \\ \times 169 \\ \hline 24552 \\ 16368 \\ 2728 \\ \hline 461032 \end{array} \end{array}$$

Estimated: $3 \times 2 = 6$

- 6) $.11 = \frac{11}{100}$
 7) $.05 = \frac{5}{100} = \frac{1}{20}$
 8) $1.00 = \frac{100}{100} = 1$
 9) $.25 = \frac{25}{100} = \frac{1}{4}$
 10) $18 \div 2 = 9$
 11) $69 \div 3 = 23$; $23 \times 2 = 46$
 12) $248 \div 8 = 31$; $31 \times 5 = 155$
 13) $4 \div 4 = 1$
 14) $\frac{63}{8} \times \frac{3}{2} = \frac{63}{8} \times \frac{3}{2} = \frac{21}{4} = 5\frac{1}{4}$
 15) $\frac{23}{7} \times \frac{7}{3} = \frac{23}{3} \times \frac{3}{7} = \frac{69}{49} = 1\frac{20}{49}$
 16) $24 \times .1 = 2.4$ dkm
 17) $105 \times 2.2 = 231$ lbs.
 18) $\$1.679 \times 2.00 = \3.358

15E

- 1) .39
 2) 3,800
 3) .087
 4) $\begin{array}{r} 48003 \\ \times 61 \\ \hline 48003 \\ 288018 \\ \hline 2928183 \end{array}$ 3 places
 Est: $50 \times .6 = 30$
 5) $\begin{array}{r} 2277 \\ \times 3154 \\ \hline 9108 \\ 11385 \\ 2277 \\ \hline 6831 \end{array}$ 2 places
 Est: $20 \times 30 = 600$
 6) $2.50 = \frac{250}{100} = 2\frac{50}{100} = 2\frac{1}{2}$
 7) $.34 = \frac{34}{100} = \frac{17}{50}$
 8) $.07 = \frac{7}{100}$
 9) $.75 = \frac{75}{100} = \frac{3}{4}$
 10) $400 \div 10 = 40$
 11) $192 \div 6 = 32$; $32 \times 5 = 160$
 12) $96 \div 4 = 24$; $24 \times 3 = 72$
 13) $100 \div 5 = 20$; $20 \times 4 = 80$
 14) $\frac{19}{3} \times \frac{17}{8} = \frac{19}{3} \times \frac{8}{17} = \frac{152}{51} = 2\frac{50}{51}$
 15) $\frac{88}{10} \times \frac{8}{3} = \frac{88}{10} \times \frac{3}{8} = \frac{33}{10} = 3\frac{3}{10}$
 16) 61 km
 17) 110 mg
 18) $\$79.97 \times .37 = \29.5889 off
 $\$79.97 - \$29.59(\text{rounded}) = \50.38
 19) $8.95 + 8.95 + 12.49 = \$30.39$
 $30.39 \times 1.16 = \$35.2524$
 rounded: \$35.25
 20) $\frac{12}{5} \times \frac{5}{3} = \frac{12}{3} = 4$ miles

15F

$$\begin{array}{r}
 1) \quad .005 \\
 2) \quad 170,000 \\
 3) \quad .5 \\
 4) \quad \begin{array}{r} 2952 \\ \times \quad 006 \\ \hline .017712 \end{array} \quad \begin{array}{l} 3 \text{ places} \\ \times 3 \text{ places} \\ 6 \text{ places} \end{array} \\
 \text{Est: } 3 \times .006 = .018
 \end{array}$$

$$\begin{array}{r}
 5) \quad \begin{array}{r} 135123 \\ \times \quad 612 \\ \hline 270246 \\ 135123 \\ \hline 810738 \\ 82695276 \end{array} \quad \begin{array}{l} 3 \text{ places} \\ \times 3 \text{ places} \\ 6 \text{ places} \end{array} \\
 \text{Est: } 100 \times .6 = 60
 \end{array}$$

6) $.02 = \frac{2}{100} = \frac{1}{50}$

7) $.20 = \frac{20}{100} = \frac{1}{5}$

8) $.60 = \frac{60}{100} = \frac{3}{5}$

9) $9.00 = \frac{900}{100} = 9$

10) $54 \div 6 = 9$

11) $88 \div 8 = 11; 11 \times 3 = 33$

12) $490 \div 7 = 70; 70 \times 5 = 350$

13) $300 \div 5 = 60; 60 \times 2 = 120$

14) $\frac{46}{9} \times \frac{13}{6} = \frac{46}{3} \times \frac{13}{2} = \frac{92}{3} = 2\frac{14}{3}$

15) $\frac{22}{3} \times \frac{2}{5} = \frac{22}{3} \times \frac{2}{5} = \frac{44}{15} = 2\frac{14}{15}$

16) $\frac{35}{4} \times \frac{5}{1} = \frac{35}{4} \times \frac{5}{1} = \frac{175}{4} = 43\frac{3}{4}$ lbs.

17) .5 kl

18) $68 \times 2.5 = 170 \text{ cm} = 1,700 \text{ mm}$

19) $\$48 \times 1.25 = \60 from Dad
 $\$48 + \$60 = \$108$ total

20) $\frac{1}{5}$ of 100 $\rightarrow 100 \div 5 = 20$

$100 \times .20 = 20$

16A

1) done

2) done

3) $A = 3.14(1.6)^2 = 8.0384 \text{ sq. m}$

$C = 2(3.14)(1.6) = 10.048 \text{ m}$

4) $A = 3.14(15)^2 = 706.5 \text{ sq. ft.}$

$C = (3.14)(30) = 94.2 \text{ ft.}$

5) $A = 3.14(12)^2 = 452.16 \text{ sq. ft.}$

6) $C = 2(3.14)(7.5) = 47.1 \text{ ft.}$

7) $C = (3.14)(12) = 37.68 \text{ in. (no)}$

8) $A = 3.14(9)^2 = 254.34 \text{ sq. m}$

16B

1) $A = 3.14(3)^2 = 28.26 \text{ sq. in.}$

$C = 2(3.14)(3) = 18.84 \text{ in.}$

2) $A = 3.14(5)^2 = 78.5 \text{ sq. ft.}$

$C = (3.14)(10) = 31.4 \text{ ft.}$

3) $A = 3.14(4.2)^2 = 55.3896 \text{ sq. m}$

$C = 2(3.14)(4.2) = 26.376 \text{ m}$

4) $A = 3.14(6)^2 = 113.04 \text{ sq. ft.}$

$C = (3.14)(12) = 37.68 \text{ ft.}$

5) $A = 3.14(16)^2 = 803.84 \text{ sq. ft.}$

6) $C = 2(3.14)(11) = 69.08 \text{ ft.}$

7) $C = (3.14)(5.4) = 16.956 \text{ mm}$

8) $A = 3.14(8.5)^2 = 226.865 \text{ sq. ft.}$

16C

1) $A = 3.14(6)^2 = 113.04 \text{ sq. in.}$

$C = 2(3.14)(6) = 37.68 \text{ in.}$

2) $A = 3.14(7)^2 = 153.86 \text{ sq. ft.}$

$C = (3.14)(14) = 43.96 \text{ ft.}$

3) $A = 3.14(10)^2 = 314 \text{ sq. m}$

$C = 2(3.14)(10) = 62.8 \text{ m}$

4) $A = 3.14(4.75)^2 = 70.84625 \text{ sq. ft.}$

$C = (3.14)(9.5) = 29.83 \text{ ft.}$

5) $A = 3.14(6)^2 = 113.04 \text{ sq. in.}$

round to 113 sq. in.

6) $A = 3.14(9)^2 = 254.34 \text{ sq. ft. (no)}$

7) $C = 2(3.14)(9) = 56.52 \text{ ft.}$

$56.52 \div 2 = 28.26$, so 29 pieces

8) $C = 2(3.14)(100) = 628 \text{ mi.}$

16D

1) $A = 3.14(1.4)^2 = 6.1544 \text{ sq. in.}$

$C = 2(3.14)(1.4) = 8.792 \text{ in.}$

2) $A = 3.14(10)^2 = 314 \text{ sq. ft.}$

$C = 3.14(20) = 62.8 \text{ ft.}$

3) .15

4) .8

5) 3,500

6) 15.5595

7) 1.68663

8) 19.94034

9) $\frac{31}{5} \times \frac{7}{4} = \frac{31}{5} \times \frac{4}{7} = \frac{124}{35} = 3\frac{19}{35}$

10) $\frac{23}{5} \times \frac{9}{2} = \frac{23}{5} \times \frac{2}{9} = \frac{46}{45} = 1\frac{1}{45}$

11) $\frac{1}{2} \times \frac{1}{8} = \frac{1}{2} \times \frac{1}{8} = \frac{1}{16} = 0.0625$

12) done

13) $10 + 10 + 10 + 10 = 40 \text{ ft.}$

14) $7 + 15 + 7 + 15 = 44 \text{ m}$

15) $12 + 13 + 12 + 13 = 50 \text{ m}$

16) $13 + 12 + 13 = 38 \text{ m}$

17) $38 \times 3 = 114$, so about 114 ft.

18) $\$18,550 \times .02 = \371

16E

- 1) $A = 3.14(3.2)^2 = 32.1536 \text{ sq. cm}$
 $C = 2(3.14)(3.2) = 20.096 \text{ cm}$
- 2) $A = 3.14(2)^2 = 12.56 \text{ sq. m}$
 $C = 3.14(4) = 12.56 \text{ m}$
- 3) .01
- 4) 5
- 5) 20,000
- 6) .064
- 7) .058
- 8) .0001
- 9) $\frac{7}{2} \cdot \frac{13}{6} = \frac{7}{2} \times \frac{3}{2} \times \frac{13}{13} = \frac{21}{2} = 1\frac{8}{2}$
- 10) $\frac{21}{4} \cdot \frac{13}{4} = \frac{21}{4} \times \frac{4}{4} \times \frac{13}{13} = \frac{21}{1} = 1\frac{8}{13}$
- 11) $\frac{7}{8} \cdot \frac{1}{16} = \frac{7}{8} \times \frac{2}{2} \times \frac{1}{16} = \frac{14}{1} = 14$
- 12) $4 + 10 + 4 + 10 = 28 \text{ in.}$
- 13) $45 + 45 + 45 + 45 = 180 \text{ ft.}$
- 14) $2.3 + 1.2 + 2.3 + 1.2 = 7 \text{ m}$
- 15) $\$2,000 \times .23 = \460
- 16) $3.14(7)^2 = 153.86 \text{ sq. in.}$
round to 154 sq. in.
- 17) $50 + 75 + 50 + 75 = 250 \text{ m.}$
- 18) $250 \times \$12.35 = \$3,087.50$
- 19) 4 kl
- 20) $\frac{7}{2} \cdot \frac{1}{4} = \frac{7}{2} \times \frac{2}{2} \times \frac{1}{4} = \frac{14}{1} = 14$

16F

- 1) $A = 3.14(1)^2 = 3.14 \text{ sq. m}$
 $C = 2(3.14)(1) = 6.28 \text{ m}$
- 2) $A = 3.14(.5)^2 = .785 \text{ sq. km}$
 $C = 3.14(1) = 3.14 \text{ km}$
- 3) 1.7
- 4) .32
- 5) 5,000
- 6) .003
- 7) 36.08
- 8) 22.04
- 9) $\frac{57}{8} \cdot \frac{15}{4} = \frac{57}{8} \times \frac{15}{4} = \frac{19}{10} = 1\frac{9}{10}$
- 10) $\frac{17}{6} \cdot \frac{7}{6} = \frac{17}{6} \times \frac{7}{6} = \frac{17}{7} = 2\frac{3}{7}$
- 11) $\frac{5}{8} \cdot \frac{1}{4} = \frac{5}{8} \times \frac{1}{4} = \frac{5}{2} = 2\frac{1}{2}$
- 12) $6 + 2 + 6 + 2 = 16 \text{ m}$
- 13) $1.2 + 1.2 + 1.2 + 1.2 = 4.8 \text{ ft.}$
- 14) $17 + 10 + 17 + 10 = 54 \text{ in.}$
- 15) $\$10.95 \times 1.20 = \13.14
- 16) $3.14(15)^2 = 706.5 \text{ sq. in.}$
- 17) $\$20.50 + \$15.98 + 11.24 = \$47.72$
 $\$47.72 \times 1.06 = \50.58
- 18) $\frac{5}{2} \times \frac{3}{2} = \frac{15}{4} = 3\frac{3}{4} \text{ cups}$
- 19) $\frac{33}{4} \cdot \frac{3}{4} = \frac{33}{4} \times \frac{3}{4} = 11$
- 20) 100,000 mm; .1 km

17A

- 1) done
- 2) done
- 3)
$$\begin{array}{r} .587 \\ 6 \overline{) 3.522} \\ \underline{30} \\ 52 \\ \underline{48} \\ 42 \\ \underline{42} \end{array}$$
- 4) $6 \times .587 = 3.522$
- 5)
$$\begin{array}{r} 8.8 \\ 9 \overline{) 79.2} \\ \underline{72} \\ 72 \\ \underline{72} \end{array}$$
- 6) $9 \times 8.8 = 79.2$
- 7)
$$\begin{array}{r} .8 \\ 5 \overline{) 4.0} \\ \underline{40} \end{array}$$
- 8) $5 \times .8 = 4.0$
- 9)
$$\begin{array}{r} .004 \\ 2 \overline{) .008} \\ \underline{008} \end{array}$$
- 10) $2 \times .004 = .008$
- 11)
$$\begin{array}{r} .0125 \\ 4 \overline{) .0500} \\ \underline{4} \\ 10 \\ \underline{8} \\ 20 \end{array}$$
- 12) $4 \times .0125 = .05$
- 13) $3.6 \div 4 = .9 \text{ of a pie}$
- 14) $5 \div 8 = .625 \text{ pts}$
- 15) $\$.75 \div 5 = \$.15$

17B

- 1)
$$\begin{array}{r} 1.5 \\ 4 \overline{) 6.0} \\ \underline{4} \\ 20 \\ \underline{20} \end{array}$$
- 2) $4 \times 1.5 = 6$
- 3)
$$\begin{array}{r} .09 \\ 3 \overline{) .27} \\ \underline{27} \end{array}$$
- 4) $3 \times .09 = .27$
- 5)
$$\begin{array}{r} .006 \\ 7 \overline{) .042} \\ \underline{42} \end{array}$$
- 6) $7 \times .006 = .042$
- 7)
$$\begin{array}{r} .05 \\ 8 \overline{) .40} \\ \underline{40} \end{array}$$
- 8) $8 \times .05 = .4$
- 9)
$$\begin{array}{r} .203 \\ 6 \overline{) 1.218} \\ \underline{12} \\ 018 \\ \underline{18} \end{array}$$
- 10) $6 \times .203 = 1.218$
- 11)
$$\begin{array}{r} 42.8 \\ 2 \overline{) 85.6} \\ \underline{8} \\ 5 \\ \underline{4} \\ 16 \\ \underline{16} \end{array}$$
- 12) $2 \times 42.8 = 85.6$
- 13) $24.8 \div 2 = 12.4 \text{ pieces}$
12 pieces with .4 of a piece left over
- 14) $2.4 \times 3 = .8 \text{ bushels}$
- 15) $34.4 \times 4 = 137.6 \text{ qt. jars}$