

**Solution Manual for Dosage Calculations Canadian 4th Edition by Abernethy
Pickar and Swart ISBN 0176657150 9780176657154**

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Chapter 2: Ratios and Percents

Review Set 2-1 (page 50)

1. $3:150 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

2. $6:10 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

3. $0.05:0.15 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

4. $20:40 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

5. $\frac{\quad}{\quad} : \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad} \div \frac{\quad}{\quad} = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

$$\begin{array}{r} 0.15 \\ 20 \overline{)3.00} \\ \underline{20} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

6. $0.3:4.5 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

$$\begin{array}{r} 0.066 \\ 4.5 \overline{)0.3000} \\ \underline{270} \\ 300 \\ \underline{270} \\ 30 \end{array}$$

7. $1:6 = \frac{\quad}{\quad} = \frac{\quad}{\quad} \div 6 = \frac{\quad}{\quad} \div \frac{\quad}{\quad} = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$

$$\begin{array}{r} 0.241 \\ 112 \overline{)27.000} \\ \underline{224} \\ 460 \\ \underline{448} \\ 12 \end{array}$$

$$\frac{112}{8}$$

8. $12:48 = \frac{\quad}{\quad} = 0.25 = \quad\%$

9. $0.08:0.64 = \frac{\quad}{\quad} = 0.125 = \mathbf{12.5\%}$

$$\begin{array}{r}
 0.125 \\
 0.64 \overline{) 0.08.000} \\
 \underline{64} \\
 160 \\
 \underline{128} \\
 320 \\
 \underline{320} \\
 0
 \end{array}$$

10. $7:10 = \frac{\quad}{\quad} = 0.7 = \quad\%$

11. $50:100 = \frac{\quad}{\quad} = \quad\%$

12. $45\% = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

13. $0.5\% = 0.005 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

14. $1\% = 0.01 = \frac{\quad}{\quad}$

15. $66\% = \frac{\quad}{\quad}\% = \frac{\quad}{\quad} \div 100 = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$

16. $2.94\% = 2.94 \div 100 = 0.0294 = \mathbf{0.03}$

17. $33\% = 33 \div 100 = \mathbf{0.33}$

18. $0.9\% = 0.9 \div 100 = 0.009 = \mathbf{0.01}$

19. $16\% = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \mathbf{4:25}$

20. $25\% = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \mathbf{1:4}$

21. $50\% = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \mathbf{1:2}$

22. $0.9\% = 0.9 \div 100 = \frac{0.009}{0.9} = \frac{1:9 = 1 \div 9 = 0.110}{\quad = 1 \div 90 = 0.011}$
0.900 is largest

23. $0.05 = \frac{0.050}{\quad} = 200 \div 400 = 0.5 = \mathbf{0.500}$ is largest
 $0.025 = \frac{0.025}{\quad}$
 $1:25 = \frac{\quad}{\quad} = 0.04 = 0.040 = 0.040$

$$\begin{array}{r}
 0.5 \\
 400 \overline{) 200} \\
 \underline{200} \\
 0 \\
 0.04 \\
 25 \overline{) 1.00} \\
 \underline{100} \\
 0
 \end{array}$$

24. $0.0125\% \div 100 = 0.000125$
 $0.25\% = 0.25 \div 100 = \mathbf{0.002500}$ is largest
 $0.1\% = 0.1 \div 100 = 0.001000$
 $0.02\% = 0.02 \div 100 = 0.002000$

25. $\text{---} = 0.007$

$\text{---} = 0.003$

$0.5 = \mathbf{0.500}$ is largest

$\text{---} \% = 0.067$

$$\begin{array}{r} 0.0066 \\ 150 \overline{)1.0000} \\ \underline{900} \\ 1000 \\ \underline{900} \\ 100 \end{array}$$

$$\begin{array}{r} 0.0033 \\ 300 \overline{)1.0000} \\ \underline{900} \\ 1000 \\ \underline{900} \\ 100 \end{array}$$

$\text{---} \% = \text{---} \div 100 = \text{---} \times \text{---} = \text{---}$

$$\begin{array}{r} 0.0066 \\ \hline 300 \overline{)2.0000} \\ \underline{1800} \\ 2000 \\ \underline{1800} \\ 200 \end{array}$$

Review Set 2-2 (page 52)

1. $X = 0.25\% \times 520$
 $X = 0.0025 \times 520$
 $X = \mathbf{1.3}$

2. $X = 5\% \times 95$
 $X = 0.05 \times 95$
 $X = \mathbf{4.75}$

3. $X = 40\% \times 140$
 $X = 0.4 \times 140$
 $X = \mathbf{56}$

4. $X = 0.7\% \times 62$ $X =$
 0.007×62 $X =$
 $0.434 = \mathbf{0.43}$

5. $X = 3\% \times 889$
 $X = 0.03 \times 889$
 $X = \mathbf{26.67}$

6. $X = 20\% \times 75$
 $X = 0.2 \times 75$
 $X = \mathbf{15}$

7. $X = 4\% \times 20$

$X = 0.04 \times 20$

$X = \mathbf{0.8}$

8. $X = 7\% \times 34$

$X = 0.07 \times 34$

$X = \mathbf{2.38}$

9. $X = 15\% \times 250$

$X = 0.15 \times 250$

$X = \mathbf{37.5}$

10. $X = 75\% \times 150$

$X = 0.75 \times 150$

$X = \mathbf{112.5}$

11. $X = 40\% \times 20$

$X = 0.4 \times 20$

$X = \mathbf{8 \text{ tablets}}$

12. $X = 60\% \times 1200$

$X = 0.60 \times 1200$

$X = \mathbf{720 \text{ mL}}$

13. $X = 80\% \text{ of } \$17,651.07$

$X = 0.8 \times \$17,651.07$

$X = \$14,120.86$

$$\begin{array}{r}
 \$17,651.07 \quad \text{total bill} \\
 - 14,120.86 \quad \text{paid by insurance company} \\
 \hline
 \$3,530.21 \quad \text{paid by patient}
 \end{array}$$

14. $X = 40\% \times 750$

$X = 0.4 \times 750$

$X = \mathbf{300 \text{ g}}$

15. $X = 20\% \times 3500$

$X = 0.2 \times 3500$

$X = \mathbf{700 \text{ calories}}$

Practice Problems—Chapter 2 (pages 52–54)

1. 0.4 , 40% , $2:5$

$$\begin{array}{r}
 = \frac{0.4}{1} \\
 5 \overline{) 2.0} \\
 \underline{20} \\
 0
 \end{array}$$

$0.4 \div 0.40 = 40\%$

2. $—$, $\%$, $:$

$0.5 = \frac{—}{—} = —$

$0.05 \div 0.05 = 5\%$

3. 0.17 , $—$, $:$

$17\% = \frac{—}{—} = 0.17$

4. 0.25 , $—$, $\%$

$$\begin{array}{r}
 1:4 = \frac{—}{—} = \frac{0.25}{1.00} \\
 4 \overline{) 1.00}
 \end{array}$$

$0.25 \div 0.25 = 25\%$

5.

..., : $\frac{6}{100} = \frac{\quad}{\quad} =$

$6\% = \frac{6}{100} = 0.06$

6. **0.17, 17%, 1:6**

$\frac{17}{100} = \frac{17 \div 6}{100 \div 6} = \frac{2.833}{16.666}$

$0.166 = 0.17 \cdot \frac{17}{100} = 17\%$

7. **0.5, 50%, 1:2**

$50\% = \frac{50}{100} = \frac{1}{2} = 1:2$
 $50\% = 0.5$

8. **0.01, 1%, 1:100**

$1:100 = \frac{1}{100}$
 $1\% = \frac{1}{100} = 0.01$

9. **0.09, 9%, 9:100**

$0.09 = \frac{9}{100}$
 $0.09 = 9\%$

10. **0.38, 38%, 38:100**

$\frac{38}{100} = \frac{38 \div 4}{100 \div 4} = \frac{9.5}{25}$

$0.375 = 0.38 \cdot \frac{38}{100} = 38\%$

11. **0.67, 67%, 67:100**

$\frac{67}{100} = \frac{67 \div 3}{100 \div 3} = \frac{22.333}{33.333}$

$0.666 = 0.67 \cdot \frac{67}{100} = 67\%$

12. **0.33, 33%, 1:3**

$\frac{33}{100} = \frac{33 \div 3}{100 \div 3} = \frac{11}{33.333}$

$0.333 = 0.33 \cdot \frac{33}{100} = 33\%$

13. —, **52%**, **13:25** $0.52 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

$0.52 \cdot 100 = 52\%$



14. **0.45**, —, **45%**

$9:20 = \frac{\quad}{\quad} = \frac{0.45}{\quad}$

$$\begin{array}{r} 20 \overline{) 9.00} \\ \underline{80} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

$0.45 \cdot 100 = 45\%$



15. **0.86**, **86%**, **6:7**

$\frac{\quad}{\quad} = \frac{0.86}{\quad}$

$$\begin{array}{r} 7 \overline{) 6.000} \\ \underline{56} \\ 40 \\ \underline{35} \\ 50 \\ \underline{49} \\ 1 \end{array}$$

$0.86 \cdot 100 = 86\%$



16. **0.3**, —, **30%**

$3:10 = \frac{\quad}{\quad} = \frac{0.3}{\quad}$

$$\begin{array}{r} 10 \overline{) 3.0} \\ \underline{30} \\ 0 \end{array}$$

$0.3 \cdot 100 = 30\%$



17. **0.02**, **2%**, **1:50**

$\frac{\quad}{\quad} = \frac{0.02}{\quad}$

$$\begin{array}{r} 50 \overline{) 1.00} \\ \underline{100} \\ 0 \end{array}$$

$0.02 \cdot 100 = 2\%$



18. —, **6%**, **3:50**

$0.06 = 6\%$

$0.06 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$



19. —, **4%**, **1:25**

$0.04 = 4\%$

$4\% = \frac{\quad}{\quad} = \frac{\quad}{\quad}$



20. **0.1**, —, **1:10**

$10\% = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

$$\begin{array}{r} 10 \overline{) 1.0} \\ \underline{10} \\ 0 \end{array}$$

21. $1:25 = \frac{\quad}{\quad} = \mathbf{0.04}$

$$\begin{array}{r} 25 \overline{) 1.00} \\ \underline{100} \\ 0 \end{array}$$

22. — = — = **1:40**

23. $0.075 \cdot 100 = \mathbf{7.5\%}$



24. $17:34 = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

25. $75\% = \frac{3}{4} = \mathbf{3:4}$

26. $X = 35\% \times 750$
 $X = 0.35 \times 750$
 $X = \mathbf{262.5}$

$$\begin{array}{r} 750 \\ \times 0.35 \\ \hline 3750 \\ 2250 \\ \hline 262.5 \end{array}$$

27. $X = 7\% \times 52$
 $X = 0.07 \times 52$
 $X = \mathbf{3.64}$

28. $X = 8.3\% \times 24$
 $X = 0.083 \times 24$
 $X = \mathbf{1.99}$

29. $1:40 = \frac{1}{40} = 0.025$

$$\begin{array}{r} 0.025 \\ 40 \overline{) 1.000} \\ \underline{80} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

$1:400 = \frac{1}{400} = 0.0025$

$$\begin{array}{r} 0.0025 \\ 400 \overline{) 1.0000} \\ \underline{800} \\ 2000 \\ \underline{2000} \\ 0 \end{array}$$

$1:4 = \frac{1}{4} = 0.25$

$$\begin{array}{r} 0.25 \\ 4 \overline{) 1.00} \\ \underline{8} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

1:4 is the strongest solution.

30. $\frac{1}{10} = 0.1$

$$\begin{array}{r} 0.1 \\ 10 \overline{) 1.0} \\ \underline{10} \\ 0 \end{array}$$

$\frac{1}{200} = 0.005$

$$\begin{array}{r} 0.005 \\ 200 \overline{) 1.000} \\ \underline{1000} \\ 0 \end{array}$$

$\frac{1}{50} = 0.02$

$$\begin{array}{r} 0.02 \\ 50 \overline{) 1.00} \\ \underline{100} \\ 0 \end{array}$$

$\frac{1}{50}$ is the strongest solution.

31. $1680 \times \frac{1}{20} = 1680 \times 0.05 = 84$

32. $\frac{16}{75} \times 75 = 16$

$$\begin{array}{r} 16 \\ 75 \overline{)1200} \\ \underline{75} \\ 450 \\ \underline{450} \\ 0 \end{array}$$

33. $5 \times 0.2 = 1$

34. $2.2 \times 250 \div 500 = 550 \div 500 = 1.1$

5
0
0

$$\begin{array}{r} 1.1 \\ 500 \overline{)550.0} \\ \underline{500} \\ 500 \\ \underline{500} \\ 0 \end{array}$$

35. $0.6 \times 16.666\ldots = 10$

$$\begin{array}{r} 100 \\ 1.2 \overline{)120.0} \\ \underline{12} \\ 000 \end{array}$$

36. $11 \times 3 = 33$

$$\begin{array}{r} 35.33 \\ 9 \overline{)318.00} \\ \underline{27} \\ 48 \\ \underline{45} \\ 30 \\ \underline{27} \\ 30 \\ \underline{27} \\ 3 \end{array}$$

37. $6 \div 8 = 0.75$

$$\begin{array}{r} 0.75 \\ 8 \overline{)6.00} \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

38. $12 \times 1.75 = 21$

39. $120 \div 8 = 15$

$$\begin{array}{r} 120 \\ 0.6 \overline{)72.0} \\ \underline{6} \\ 12 \\ \underline{12} \\ 00 \end{array}$$

$$40. 4 \times 22.5 = 4 \times 22.5 = \mathbf{90}$$

$$41. - \times 368 = \mathbf{138 \text{ nurses}}$$

$$- \times 368 = \mathbf{46 \text{ maintenance/cleaners}}$$

$$- \times 368 = \mathbf{92 \text{ technicians and 92 others}}$$

$$42. 125 \times 0.2 = \mathbf{25 \text{ g protein}}$$

$$\begin{array}{r} 125 \\ \times 0.2 \\ \hline \end{array}$$

$$125 \times 0.05 = \mathbf{6.25 \text{ g fat}}$$

$$25.0 = 25$$

$$\begin{array}{r} 125 \\ \times 0.05 \\ \hline 6.25 = 6.25 \end{array}$$

$$43. 308 \times 0.75 = \mathbf{231 \text{ points needed to pass}}$$

$$\begin{array}{r} 308 \\ \times 0.75 \\ \hline 2156 \\ 1540 \\ \hline 231.00 \end{array}$$

$$44. \underline{\quad} \times 200 \text{ calories} = \underline{\quad} = \underline{\quad} = \mathbf{60 \text{ minutes}}$$

$$45. 0.25 \times 200 = \mathbf{50 \text{ mL}}$$

$$\begin{array}{r} 200 \\ \times 0.25 \\ \hline 1000 \\ 400 \\ \hline 50.00 \end{array}$$

$$46. 60 \times 0.45 = \mathbf{27 \text{ mg}}$$

$$\begin{array}{r} 60 \\ \times 0.45 \\ \hline 300 \\ 240 \\ \hline 27.00 \end{array}$$

$$47. \underline{\quad} \times 42 \text{ minutes} = 6.75 \text{ mg} \times 42 = \mathbf{283.5 \text{ mg of medication}}$$

$$\begin{array}{r} 6.75 \\ \times 42 \\ \hline 1350 \\ 2700 \\ \hline 283.50 \end{array}$$

$$48. 60 \text{ kg} \times 0.05 = \mathbf{3 \text{ kg}}$$

$$49. 0.17 \times \$12.56 = 2.14$$

$$\begin{array}{r} \$12.56 \\ - 2.14 \\ \hline \mathbf{\$10.42} \end{array}$$

50. $10\% \text{ of } 150 = 0.10 \times 150 = 15$

150 mg first dose
- 15
135 mg second dose
- 15
120 mg third dose
- 15
105 mg fourth dose
- 15
90 mg fifth dose
- 15
75 mg sixth dose

6 total doses