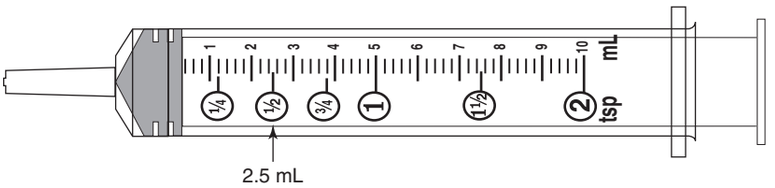
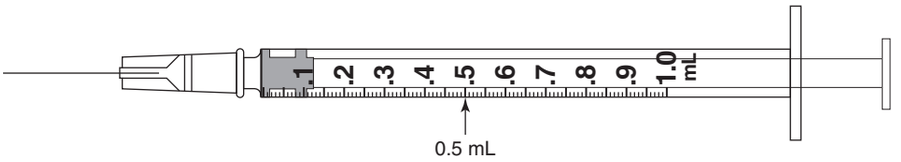
Essential Skills Evaluation: Pretest and Posttest from pages 4–20

1) $\frac{1}{2}$; 3 times a day **2)** 3; 2 times a day **3)** 10; 2; once a day **4)** $\frac{1}{2}$; every 3 hours as needed for moderate pain

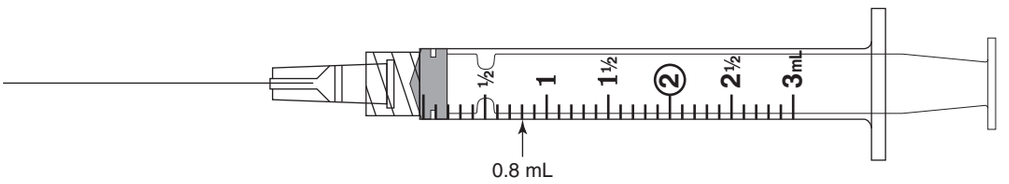
5) 2; once every morning **6)** 2.5; every 8 hours



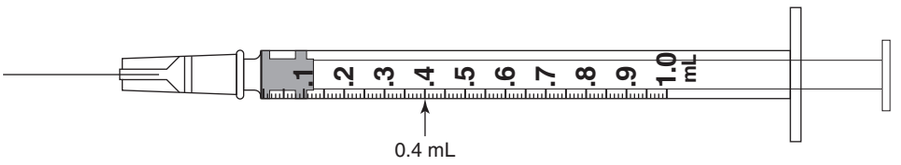
7) 0.5; every 4 hours as needed for nausea



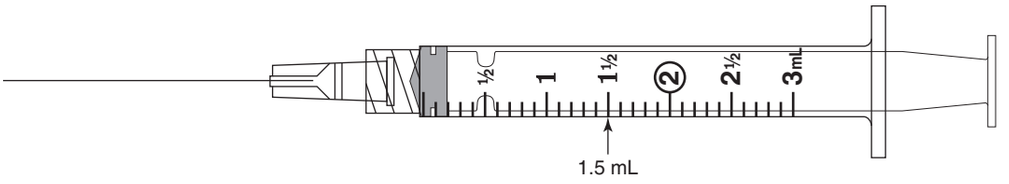
8) 0.8; once, immediately



9) 0.4; every 4 hours as needed for severe pain

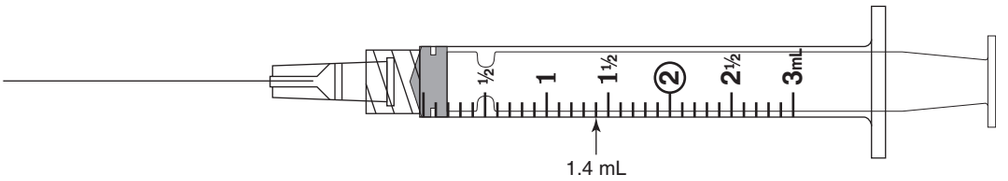


10) 1.5; once, immediately

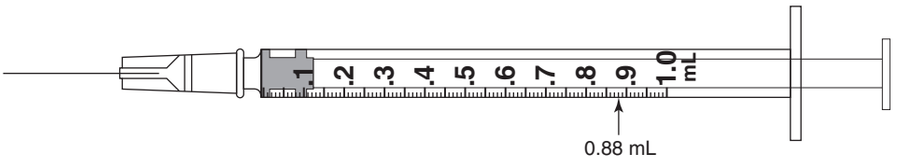


Essential Skills Evaluation — Pages 4–20

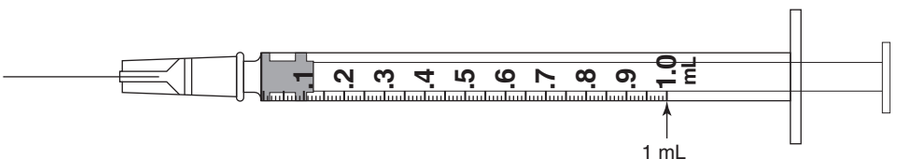
11) 1.4; every 8 hours

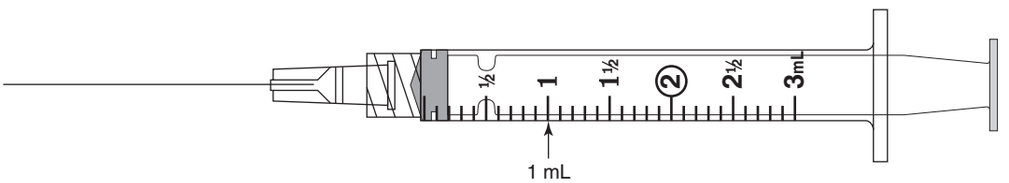


12) 0.88; once, immediately

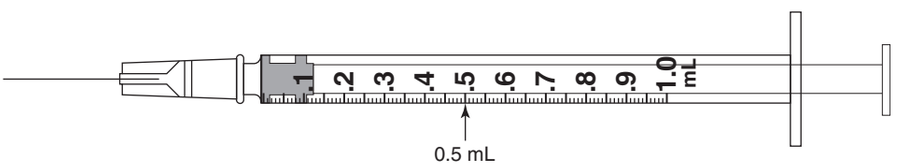


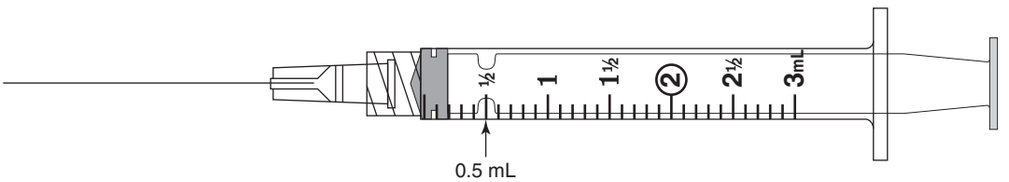
13) 1; once, immediately; either syringe is appropriate



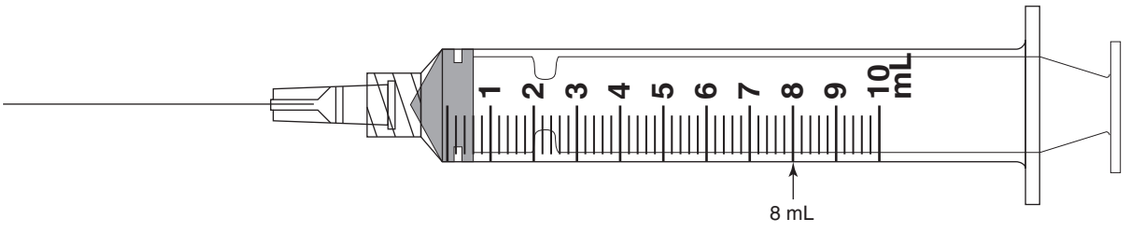


14) 0.5; once, every morning; either syringe is appropriate

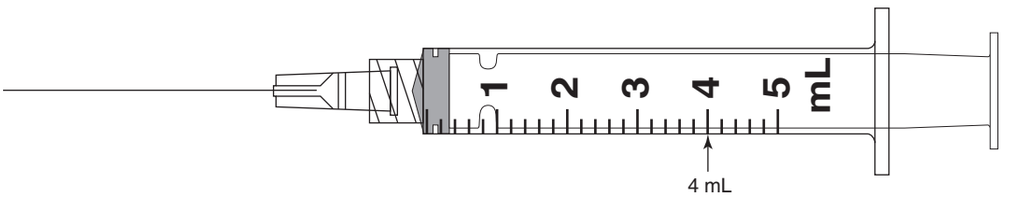




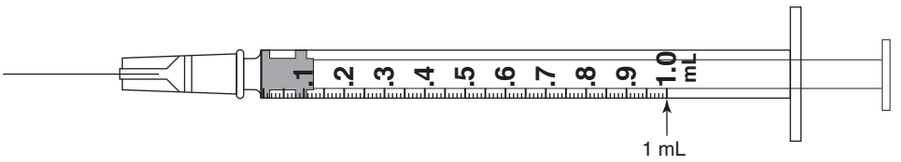
15) 8; every 12 hours



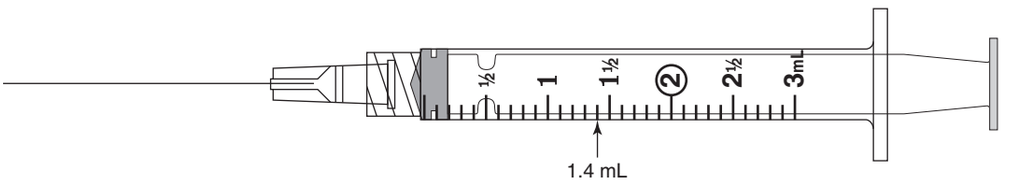
16) 4; every 12 hours



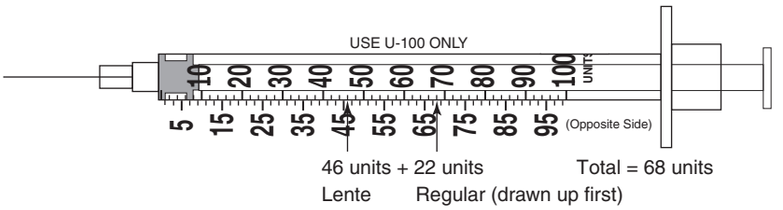
17) 1; 1; 0.25; every 8 hours



18) 1.4; 75; every 6 hours

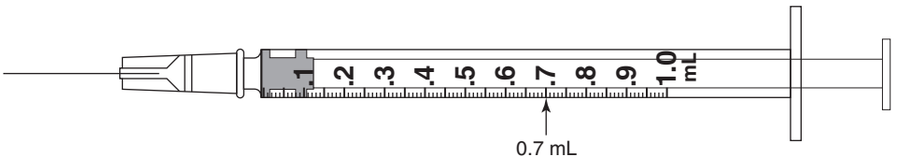


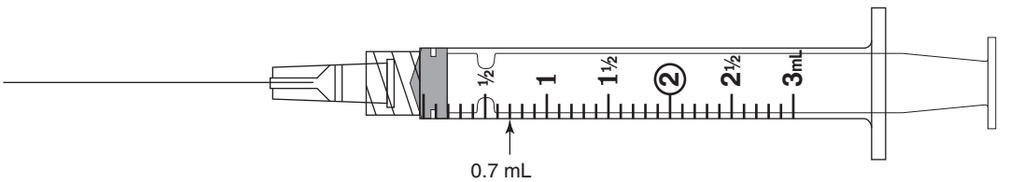
19) 68; once a day before breakfast



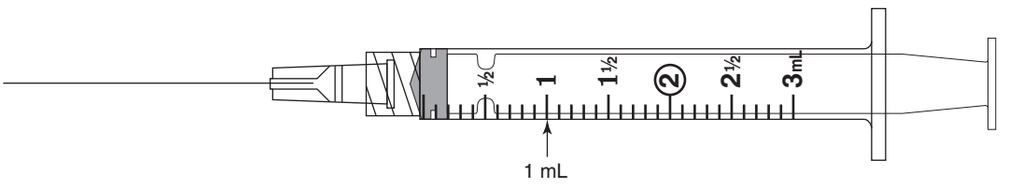
20) 1

21) Benadryl; 0.7; either syringe is appropriate



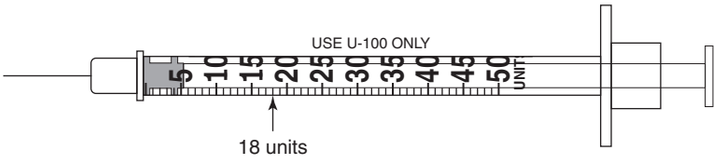


22) Narcan; 1



23) Yes. Her temperature is 102.2°F. Tylenol every 4 hours as needed is indicated for fever greater than 101°F. It has been 5 hours and 5 minutes since her last dose. **24)** 2 **25)** 18.8; 138 **26)** 138 **27)** 8; 2 **28)** 1; 0700; 1200; 1700

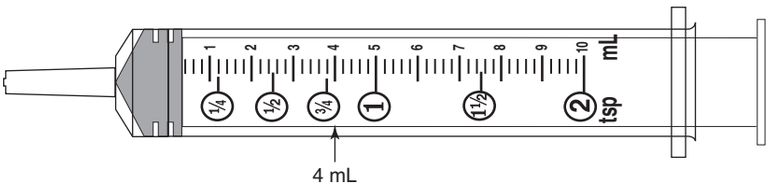
29) 18; subcutaneous



30) 113

31) Yes; the usual dosage is 20–40 mg/kg/day divided into 3 doses q.8h, which is equivalent to 67–133 mg per dose for a 22 lb (10 kg) child.

32) 4



33) Yes; the usual dosage is 40 mg/kg/day divided into 3 doses q.8h, which is equivalent to 240 mg per dose for a 40 lb (approx. 18 kg) child.

34) 3; dosage is safe **35)** 103.3 **36)** 282; 423 **37)** 9.4 **38)** 250–375; Yes **39)** 1.7; 26 **40)** 880 **41)** 25 **42)** 1 **43)** 5; 5 **44)** 50 **45)** 0030; 12:30 AM the next day **46)** 10 **47)** 100; 1 **48)** 5

49)

1/30/xx, 1500, reconstituted as 100 mg/mL. Expires 1/31/xx, 1500. G.D.P.

50) Prevention: The importance of checking a medication label at least three times to verify supply dosage cannot be overemphasized. It is also important NEVER to assume that the supply dosage is the same as a supply dosage used to calculate previously. Always read the label carefully. Writing the calculation down will also help improve accuracy.

Solutions—Essential Skills Evaluation: Pretest and Posttest

1) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{40}\ \cancel{mg}}}{\underset{2}{\cancel{80}\ \cancel{mg}}} \times 1 \text{ tablet} = \frac{1}{2} \text{ tablet}$

2) $\frac{D}{H} \times Q = \frac{1.5\ \cancel{mg}}{0.5\ \cancel{mg}} \times 1 \text{ tablet} = 3 \text{ tablets}$

3) Use 10 mg capsules; 40 mg capsule cannot be split to provide the 20 mg dose.

$\frac{D}{H} \times Q = \frac{\overset{2}{\cancel{20}\ \cancel{mg}}}{\underset{1}{\cancel{10}\ \cancel{mg}}} \times 1 \text{ capsule} = 2 \text{ capsules}$

4) $\frac{D}{H} \times Q = \frac{2.5\ \cancel{mg}}{5\ \cancel{mg}} \times 1 \text{ tablet} = \frac{2.5}{5.0} \text{ tab} = \frac{1}{2} \text{ tablet}$

5) $\frac{D}{H} \times Q = \frac{0.3\ \cancel{mg}}{0.15\ \cancel{mg}} \times 1 \text{ tablet} = \frac{0.30}{0.15} \text{ tab} = 2 \text{ tablets}$

6) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{100}\ \cancel{mg}}}{\underset{2}{\cancel{200}\ \cancel{mg}}} \times 5 \text{ mL} = \frac{5}{2} \text{ mL} = 2.5 \text{ mL}$

7) $\frac{D}{H} \times Q = \frac{12.5\ \cancel{mg}}{25\ \cancel{mg}} \times 1 \text{ mL} = \frac{12.5}{25.0} \text{ mL} = 0.5 \text{ mL}$

8) $\frac{D}{H} \times Q = \frac{\overset{4}{\cancel{40}\ \cancel{mg}}}{\underset{5}{\cancel{50}\ \cancel{mg}}} \times 1 \text{ mL} = \frac{4}{5} \text{ mL} = 0.8 \text{ mL}$

9) $\frac{D}{H} \times Q = \frac{4\ \cancel{mg}}{10\ \cancel{mg}} \times 1 \text{ mL} = 0.4 \text{ mL}$

10) $\frac{D}{H} \times Q = \frac{3\ \cancel{mg}}{2\ \cancel{mg}} \times 1 \text{ mL} = 1.5 \text{ mL}$

11) $\frac{D}{H} \times Q = \frac{350\ \cancel{mg}}{500\ \cancel{mg}} \times 2 \text{ mL} = \frac{700}{500} \text{ mL} = 1.4 \text{ mL}$

12) $\frac{D}{H} \times Q = \frac{35\ \cancel{mg}}{80\ \cancel{mg}} \times 2 \text{ mL} = \frac{70}{80} \text{ mL} = 0.875 \text{ mL} = 0.88 \text{ mL}$

13) 1 mg = 1,000 mcg (known equivalent)

$0.2\ \cancel{mg} \times 1{,}000 \text{ mcg}/\cancel{mg} = 0.200. = 200 \text{ mcg}$

$\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{200}\ \cancel{mcg}}}{\underset{1}{\cancel{200}\ \cancel{mcg}}} \times 1 \text{ mL} = 1 \text{ mL}$

14) 1 mg = 1,000 mcg (known equivalent)

$0.125\ \cancel{mg} \times 1{,}000 \text{ mcg}/\cancel{mg} = 0.125. = 125 \text{ mcg}$

$\frac{D}{H} \times Q = \frac{125\ \cancel{mcg}}{500\ \cancel{mcg}} \times 2 \text{ mL} = \frac{\overset{1}{\cancel{250}}}{\underset{2}{\cancel{500}}} \text{ mL} = 0.5 \text{ mL}$

15) $\frac{D}{H} \times Q = \frac{80\ \cancel{mg}}{\underset{10}{\cancel{100}\ \cancel{mg}}} \times \overset{1}{\cancel{10}} \text{ mL} = \frac{\overset{8}{\cancel{80}}}{\underset{1}{\cancel{10}}} \text{ mL} = 8 \text{ mL}$

16) 1 g = 1,000 mg (known equivalent)

$0.4\ \cancel{g} \times 1{,}000 \text{ mg}/\cancel{g} = 0.400. = 400 \text{ mg}$

$\frac{D}{H} \times Q = \frac{\overset{4}{\cancel{400}\ \cancel{mg}}}{\underset{1}{\cancel{100}\ \cancel{mg}}} \times 1 \text{ mL} = 4 \text{ mL}$

ANSWERS

17) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{50\ mg}}}{\underset{5}{\cancel{250\ mg}}} \times 5\ mL = \frac{5}{5}\ mL = 1\ mL$

250 mg/5 mL = 50 mg/1 mL

Do not exceed 50 mg/1 min. The 1 mL dose = 50 mg. Administer at 1 mL/1 min or 0.25 mL/15 seconds.

$\frac{1\ mL}{60\ sec} \times \frac{X\ mL}{15\ sec}$

$60X = 15$

$\frac{60X}{60} = \frac{15}{60}$

$X = \frac{1}{4}\ mL = 0.25\ mL$

Either syringe could measure the amount, but the 1 mL syringe will provide greater control for pushing medication at the rate recommended.

18) $\frac{D}{H} \times Q = \frac{35\ \cancel{mg}}{25\ \cancel{mg}} \times 1\ mL = \frac{35}{25}\ mL = 1.4\ mL$

$\frac{V\ (mL)}{T\ (min)} \times C\ (gtt/mL) = \frac{100\ \cancel{mL}}{20\ min} \times 15\ gtt/\cancel{mL}$

$= \frac{1{,}500}{20}\ gtt/min = 75\ gtt/min$

19) 46 units + 22 units = 68 units (total)

20) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{30\ mg}}}{\underset{2}{\cancel{60\ mg}}} \times 2\ mL = \frac{2}{2}\ mL = 1\ mL$

21) $\frac{D}{H} \times Q = \frac{\overset{7}{\cancel{35\ mg}}}{\underset{10}{\cancel{50\ mg}}} \times 1\ mL = \frac{7}{10}\ mL = 0.7\ mL$

22) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{0.4\ mg}}}{\underset{1}{\cancel{0.4\ mg}}} \times 1\ mL = 1\ mL$

23) °F = 1.8°C + 32 = (1.8 × 39) + 32

= 70.2 + 32 = 102.2°F;

102.2°F is greater than 101°F;

2400 − 2110 = 0250 or 2 h 50 min;

0215 = 2 h 15 min after 2400;

2 h 50 min + 2 h 15 min = 5 h 5 min

24) $\frac{D}{H} \times Q = \frac{\overset{2}{\cancel{650\ mg}}}{\underset{1}{\cancel{325\ mg}}} \times 1\ tablet = 2\ tablets$

25) $\frac{D}{H} \times Q = \frac{100\ \cancel{mg}}{\underset{16}{\cancel{80\ mg}}} \times \overset{3}{\cancel{15}}\ mL = \frac{300}{16}\ mL = 18.75\ mL$

= 18.8 mL

Measure the 18.8 mL precisely to add to the IV PB bag. But for the drip-rate calculation, such a precise measurement is not necessary. You may round the 18.8 mL to 19 mL for the computation of the drip rate only.

50 mL + 19 mL = 69 mL

$\frac{V\ (mL)}{T\ (min)} \times C\ (gtt/mL) = \frac{69\ \cancel{mL}}{\underset{1}{\cancel{30\ min}}} \times \overset{2}{\cancel{60}}\ gtt/\cancel{mL}$

= 138 gtt/min

26) Pump measured in mL/h. 69 mL in 30 min = 138 mL in 60 min.

$\frac{69\ mL}{30\ min} \times \frac{X\ mL}{60\ min}$

$30X = 4{,}140$

$\frac{30X}{30} = \frac{4{,}140}{30}$

$X = 138\ mL$

27) $\frac{D}{H} \times Q = \frac{\overset{1}{\cancel{125\ mg}}}{\underset{4}{\cancel{500\ mg}}} \times 8\ mL = \frac{\overset{2}{\cancel{8}}}{\underset{1}{\cancel{4}}}\ mL = 2\ mL$

28) $\frac{D}{H} \times Q = \frac{1\ \cancel{g}}{1\ \cancel{g}} \times 1\ tablet = 1\ tablet$

31) 1 kg = 2.2 lb (known equivalent)

22 lb ÷ 2.2 lb/kg = 22 $\cancel{lb}$ × 1 kg/2.2 $\cancel{lb}$ = 10 kg

Minimum dosage: 20 mg/$\cancel{kg}$/day × 10 $\cancel{kg}$ = 200 mg/day

200 mg/day ÷ 3 doses/day = 200 mg/$\cancel{day}$ × 1 $\cancel{day}$/3 doses = 66.6 mg/dose = 67 mg/dose

Maximum dosage: 40 mg/$\cancel{kg}$/day × 10 $\cancel{kg}$ = 400 mg/day

400 mg/day ÷ 3 doses/day = 400 mg/$\cancel{day}$ × 1 $\cancel{day}$/3 doses = 133.3 mg/dose = 133 mg/dose

32) $\frac{D}{H} \times Q = \frac{\overset{4}{\cancel{100\ mg}}}{\underset{5}{\cancel{125\ mg}}} \times 5\ mL = \frac{20}{5}\ mL = 4\ mL$

33) 1 kg = 2.2 lb (known equivalent)

40 lb ÷ 2.2 lb/kg = 40 $\cancel{lb}$ × 1 kg/2.2 $\cancel{lb}$ = 18.18 kg = 18.2 kg

40 mg/$\cancel{kg}$/day × 18.2 $\cancel{kg}$ = 728 mg/day

728 mg/day ÷ 3 doses/day = 728 mg/$\cancel{day}$ × 1 $\cancel{day}$/3 doses = 242.6 mg/dose = 243 mg/dose

close approximation to ordered dosage of 240 mg; dosage is safe.

34) $\frac{D}{H} \times Q = \frac{240\ \cancel{mg}}{\underset{80}{\cancel{400\ mg}}} \times \overset{1}{\cancel{5}}\ mL = \frac{240}{80}\ mL = 3\ mL$

35) °F = 1.8 °C + 32 = (1.8 × 39.6) + 32 = 71.28 + 32

= 103.28°F = 103.3°F

36) 1 kg = 2.2 lb (known equivalent)

62 lb ÷ 2.2 lb/kg = 62 $\cancel{lb}$ × 1 kg/2.2 $\cancel{lb}$

= 28.18 kg = 28.2 kg

Minimum dosage: 10 mg/$\cancel{kg}$ × 28.2 $\cancel{kg}$ = 282 mg

Maximum dosage: 15 mg/$\cancel{kg}$ × 28.2 $\cancel{kg}$ = 423 mg

37) $\frac{D}{H} \times Q = \frac{\overset{30}{\cancel{300\ mg}}}{\underset{8}{\cancel{80\ mg}}} \times 2.5\ mL = \frac{75}{8}\ mL = 9.37\ mL$

= 9.4 mL

38) 1 kg = 2.2 lb (known equivalent)

110 lb ÷ 2.2 lb/kg = 110 $\cancel{\text{lb}}$ × 1 kg/2.2 $\cancel{\text{lb}}$ = 50 kg

Minimum dosage: 20 mg/$\cancel{\text{kg}}$/day × 50 $\cancel{\text{kg}}$ = 1,000 mg/day

1,000 mg/day ÷ 4 doses/day = 1,000 mg/$\cancel{\text{day}}$ × 1 $\cancel{\text{day}}$/4 doses = 250 mg/dose

Maximum dosage: 30 mg/$\cancel{\text{kg}}$/day × 50 $\cancel{\text{kg}}$ = 1,500 mg/day

1,500 mg/day ÷ 4 doses/day = 1,500 mg/$\cancel{\text{day}}$ × 1 $\cancel{\text{day}}$/4 doses = 375 mg/dose

39) $\frac{D}{H} \times Q = \frac{\overset{5}{\cancel{250}}\ \cancel{\text{mg}}}{\underset{6}{\cancel{300}}\ \cancel{\text{mg}}} \times 2\text{ mL} = \frac{10}{6}\text{ mL} = 1.66\text{ mL} = 1.7\text{ mL}$

1.7 mL (medication) + 50 mL (IV fluid) = 51.7 mL = 52 mL (to be infused)

$\frac{V\text{ (mL)}}{T\text{ (min)}} \times C\text{ (gtt/mL)} = \frac{52\ \cancel{\text{mL}}}{\underset{2}{\cancel{20}}\text{ min}} \times \overset{1}{\cancel{10}}\text{ gtt/}\cancel{\text{mL}}$

$= \frac{52}{2}\text{ gtt/min} = 26\text{ gtt/min}$

40) IV fluid: 50 mL + 50 mL = 100 mL

Gelatin: 4 fl oz = 4 $\cancel{\text{fl oz}}$ × 30 mL/$\cancel{\text{fl oz}}$ = 120 mL

Water: 3 fl oz × 2 = 6 fl oz = 6 $\cancel{\text{fl oz}}$ × 30 mL/$\cancel{\text{fl oz}}$ = 180 mL

Apple juice: 16 fl oz = 16 $\cancel{\text{fl oz}}$ × 30 mL/$\cancel{\text{fl oz}}$ = 480 mL

Total = 880 mL

41) $\frac{V\text{ (mL)}}{T\text{ (min)}} \times C\text{ (gtt/mL)} = \frac{600\ \cancel{\text{mL}}}{\underset{24}{\cancel{240}}\text{ min}} \times \overset{1}{\cancel{10}}\text{ gtt/}\cancel{\text{mL}}$

$= \frac{600}{24}\text{ gtt/min} = 25\text{ gtt/min}$

42) $\frac{D}{H} \times Q = \frac{1\ \cancel{\text{mg}}}{\underset{1}{\cancel{50}}\ \cancel{\text{mg}}} \times \overset{1}{\cancel{50}}\text{ mL} = 1\text{ mL}$

43) 1 mg/$\cancel{\text{dose}}$ × 5 $\cancel{\text{doses}}$ = 5 mg

1 mL/$\cancel{\text{dose}}$ × 5 $\cancel{\text{doses}}$ = 5 mL

44) 50 mg ÷ 1 mg/dose = 50 $\cancel{\text{mg}}$ × 1 dose/1 $\cancel{\text{mg}}$ = 50 doses

45) 50 doses ÷ 5 doses/h = 50 $\cancel{\text{doses}}$ × 1 h/5 $\cancel{\text{doses}}$ = 10 h;

1430 h + 1000 h = 2430 h = 0030 = 12:30 AM

(or 30 min after midnight, the next day)

46) 1 g = 1,000 mg (known equivalent)

1,000 mg ÷ 100 mg/mL = 1,000 $\cancel{\text{mg}}$ × 1 mL/100 $\cancel{\text{mg}}$ = 10 mL;

therefore, after adding 9.6 mL to the vial, the resulting volume totals 10 mL.

47) 100; 1

48) 1 g = 1,000 mg (known equivalent)

0.5 $\cancel{\text{g}}$ × 1,000 mg/$\cancel{\text{g}}$ = 0.500. = 500 mg

$\frac{D}{H} \times Q = \frac{\overset{5}{\cancel{500}}\ \cancel{\text{mg}}}{\underset{1}{\cancel{100}}\ \cancel{\text{mg}}} \times 1\text{ mL} = 5\text{ mL}$

49) Clinical reasoning indicates that the full reconstituted solution will be used up within 2 doses, so storage unrefrigerated for 24 hours is satisfactory.

Mathematics Diagnostic Evaluation from pages 28–30

1) 1,517.63 **2)** 20.74 **3)** 100.66 **4)** $323.72 **5)** 46.11 **6)** 754.5 **7)** 16.91 **8)** 19,494.7 **9)** $173.04 **10)** 403.26 **11)** 36 **12)** 2,500 **13)** $\frac{2}{3}$ **14)** 6.25 **15)** $\frac{4}{5}$ **16)** 40% **17)** 0.4% **18)** 0.05 **19)** 1:3 **20)** 0.02 **21)** $1\frac{1}{4}$ **22)** $6\frac{13}{24}$ **23)** $1\frac{11}{18}$ **24)** $\frac{3}{5}$ **25)** $14\frac{7}{8}$ **26)** $\frac{1}{100}$ **27)** 0.009 **28)** 320 **29)** 3 **30)** 0.05 **31)** 4 **32)** 0.09 **33)** 0.22 **34)** 25 **35)** 4 **36)** 0.75 **37)** 3 **38)** 500 **39)** 18.24 **40)** 2.4 **41)** $\frac{1}{5}$ **42)** 1:50 **43)** 5 tablets **44)** 2 milligrams **45)** 30 kilograms **46)** 3.3 pounds **47)** 6.67 centimeters **48)** 7.5 centimeters **49)** 90% **50)** 5:1

Solutions—Mathematics Diagnostic Evaluation

1) 1,517 + 0.63 = 1,517.00

```
  1,517.00
 +    0.63
  1,157.63
```

2) 0.7 + 0.035 + 20.006 =

```
   0.700
   0.035
 +20.006
  20.741 = 20.74
```

3)

```
   9.50
  17.06
  32.00
  41.11
 + 0.99
 100.66
```

4) $19.69 + $304.03 =

```
  $ 19.69
 + 304.03
  $323.72
```

5) 93.2 − 47.09 =

```
   8 13 1 10
   9̸3̸.2̸0̸
 − 47.09
   46.11
```

6)

```
  1,005.0
 −  250.5
    754.5
```

7) 17.156 − 0.25 =

```
     6 11
  17̸.1̸56
 − 0.250
  16.906 = 16.91
```

8) 509 × 38.3 =

```
     509
  × 38.3
    1527
   4072
  1527
  194947 = 19,494.7
```

ANSWERS

9) $\$4.12 \times 42 =$

$$\begin{array}{r} \$4.12 \\ \times\ 42 \\ \hline 824 \\ 1648 \\ \hline \$173.04 \end{array}$$

10)

$$\begin{array}{r} 17.16 \\ \times\ 23.5 \\ \hline 8580 \\ 5148 \\ 3432 \\ \hline 403.260 \end{array} = 403.26$$

11) $972 \div 27 = 27\overline{)972}$

$$\begin{array}{r} 36 \\ \hline 81 \\ 162 \\ 162 \end{array}$$

12)

$$\begin{array}{r} 2500. \\ 0.001.\overline{)2.500.\uparrow} \end{array} = 2{,}500$$

13) $\frac{1}{4} \div \frac{3}{8} = \frac{1}{\cancel{4}_{1}} \times \frac{\overset{2}{\cancel{8}}}{3} = \frac{2}{3}$

14) $\frac{1{,}500}{240} = 240\overline{)1{,}500.00}$

$$\begin{array}{r} 6.25 \\ \hline 1\,440\downarrow \\ 60\,0 \\ 48\,0\downarrow \\ 12\,00 \\ 12\,00 \end{array}$$

15) $0.8 = \frac{\overset{4}{\cancel{8}}}{\underset{5}{\cancel{10}}} = \frac{4}{5}$

16) $\frac{2}{5} = 5\overline{)2.0}$

$$\begin{array}{r} 0.4 \\ \hline 2\,0 \end{array}$$

$0.4 \times 100 = 0.40. = 40\%$

17) $0.004 \times 100 = 0.00.4 = 0.4\%$

18) $5\% = \frac{5}{100} = 5 \div 100 = .05. = 0.05$

19) $33\frac{1}{3}\% = \frac{33\frac{1}{3}}{100} = \frac{\frac{100}{3}}{100} = \frac{100}{3} \div \frac{100}{1}$

$$= \frac{\cancel{100}}{3} \times \frac{1}{\cancel{100}} = \frac{1}{3} =$$

20) $1{:}50 = 50\overline{)1.00}$

$$\begin{array}{r} 0.02 \\ \hline 1\,00 \end{array}$$

21) $\frac{1}{2} + \frac{3}{4}$

$$\begin{array}{r} \frac{1}{2} = \frac{2}{4} \\ +\frac{3}{4} = +\frac{3}{4} \\ \hline \frac{5}{4} = 1\frac{1}{4} \end{array}$$

22) $1\frac{2}{3} + 4\frac{7}{8}$

$$\begin{array}{r} 1\frac{2}{3} = 1\frac{16}{24} \\ +4\frac{7}{8} = +4\frac{21}{24} \\ \hline 5\frac{37}{24} = 6\frac{13}{24} \end{array}$$

23) $1\frac{5}{6} - \frac{2}{9}$

$$\begin{array}{r} 1\frac{5}{6} = 1\frac{15}{18} \\ -\frac{2}{9} = -\frac{4}{18} \\ \hline 1\frac{11}{18} \end{array}$$

24) $\frac{1}{100} \times 60 = \frac{1}{\underset{5}{\cancel{100}}} \times \frac{\overset{3}{\cancel{60}}}{1} = \frac{3}{5}$

25) $4\frac{1}{4} \times 3\frac{1}{2} = \frac{17}{4} \times \frac{7}{2} = \frac{119}{8} = 14\frac{7}{8}$

26) $\frac{1}{150}$; $\frac{1}{200}$; $\frac{1}{100}$

$\frac{1}{100}$ is the greatest

27)

$$\begin{array}{l} 0.009 \\ 0.190 \\ 0.900 \\ \quad\uparrow \end{array}$$

0.009 has the smallest value in the tenth place

28) $\frac{6.4}{0.02} = 0.02.\overline{)6.40!} = 320$

$$\begin{array}{r} 3\,20. \\ \hline 6\downarrow \\ 04 \\ 4\downarrow \\ 00 \end{array}$$

29) $\frac{0.02 + 0.16}{0.4 - 0.34}$

$$\begin{array}{rr} 0.02 & 0.40 \\ +\ 0.16 & -\ 0.34 \\ \hline 0.18 & 0.06 \end{array}$$

$\frac{0.18}{0.06} = 0.06.\overline{)0.18!} = 3$

30) $\frac{3}{12+3} \times 0.25 = \frac{3}{15} \times \frac{\overset{1}{\cancel{25}}}{\underset{4}{\cancel{100}}} = \frac{3}{60} = 60\overline{)3.00}$

$$\begin{array}{r} 0.05 \\ \hline 0\,0\downarrow \\ 3\,00 \\ 3\,00 \end{array}$$

31) 8% of 50 = $0.08 \times 50 = 4$

32) $\frac{1}{2}\% = 0.5\% = 0.005$

$$\begin{array}{r} 18 \\ \times 0.005 \\ \hline 0.090 = 0.09 \end{array}$$

33) $0.9\% \times 24 = 0.009 \times 24 = 0.216 = 0.22$

34) $\frac{1{:}1{,}000}{1{:}100} \times 250 = \frac{\frac{1}{1{,}000}}{\frac{1}{100}} \times 250 = \frac{1}{1{,}000} \div \frac{1}{100} \times 250$

$$= \frac{1}{\underset{10}{\cancel{1{,}000}}} \times \frac{\overset{1}{\cancel{100}}}{1} \times \frac{250}{1} = \frac{250}{10} = 25$$

35) $\frac{300}{150} \times 2 = X$

$\frac{\overset{2}{\cancel{300}}}{\underset{1}{\cancel{150}}} \times 2 = X$

$X = 4$

36) $\frac{2.5}{5} \times 1.5 = X$

$X = 0.5 \times 1.5 = 0.75$

37) $\frac{1{,}000{,}000}{250{,}000} \times X = 12$

$\frac{\overset{4}{\cancel{1{,}000{,}000}}}{\underset{1}{\cancel{250{,}000}}} \times X = 12$

$4X = 12$

$\frac{4X}{4} = \frac{12}{4}$

$X = 3$

38) $\frac{0.51}{1.7} \times X = 150$

$0.3X = 150$

$\frac{0.3X}{0.3} = \frac{150}{0.3}$

$X = 500$

39) $X = (82.4 - 52)\frac{3}{5}$

$X = 30.4 \times \frac{3}{5} = \frac{30.4}{1} \times \frac{3}{5} = \frac{91.2}{5} = 18.24$

40) $\frac{\frac{1}{150}}{\frac{1}{300}} \times 1.2 = X$

$\left(\frac{1}{150} \div \frac{1}{300}\right) \times 1.2 = X$

$\left(\frac{1}{\underset{1}{\cancel{150}}} \times \frac{\overset{2}{\cancel{300}}}{1}\right) \times 1.2 = X$

$2 \times 1.2 = X$

$2.4 = X$

41) $2{:}10 = \frac{2}{10} = \frac{1}{5}$

42) $2\% = \frac{2}{100} = \frac{1}{50} = 1{:}50$

43) $25 \div 5 = 5$ tablets

44) $0.5 \times 4 = 2$ milligrams/day

45) 66 pounds $= \frac{66}{2.2} = 30$ kilograms or

$\frac{2.2 \text{ pounds}}{1 \text{ kilogram}} \quad \frac{66 \text{ pounds}}{X \text{ kilograms}}$

$2.2X = 66$

$\frac{2.2X}{2.2} = \frac{66}{2.2}$

$X = 30$ kilograms

46) $\frac{2.2 \text{ pounds}}{1 \text{ kilogram}} \quad \frac{X \text{ pounds}}{1.5 \text{ kilograms}}$

$X = 3.3$ lb

$\begin{array}{r} 2.2 \\ \times 1.5 \\ \hline 110 \\ 22 \\ \hline 3.30 \end{array}$

47) $\frac{1 \text{ centimeter}}{\frac{3}{8} \text{ inch}} \quad \frac{X \text{ centimeter}}{2\frac{1}{2} \text{ inches}}$

$\frac{3}{8}X = 2\frac{1}{2}$

$\frac{3}{8}X = \frac{5}{2}$

$\frac{\frac{3}{8}X}{\frac{3}{8}} = \frac{\frac{5}{2}}{\frac{3}{8}}$

$X = \frac{5}{2} \div \frac{3}{8} = \frac{5}{\underset{1}{\cancel{2}}} \times \frac{\overset{4}{\cancel{8}}}{3} = \frac{20}{3} = 6.666 = 6.67$

48) $\frac{2.5 \text{ centimeters}}{1 \text{ inch}} \quad \frac{X \text{ centimeters}}{3 \text{ inches}}$

$X = 7.5$ centimeters

49) $\begin{array}{r} 50 \text{ items} \\ -\ 5 \text{ incorrect} \\ \hline 45 \text{ correct} \end{array}$ $\frac{45}{50} = \frac{9}{10} = 90\%$ (correct)

50) 5 females to 1 male
5:1

Review Set 1 from pages 37–38

1) $\frac{6}{6}, \frac{7}{5}$ **2)** $\frac{\frac{1}{100}}{\frac{1}{150}}$ **3)** $\frac{1}{4}, \frac{1}{14}$ **4)** $1\frac{2}{9}, 1\frac{1}{4}, 5\frac{7}{8}$ **5)** $\frac{3}{4} = \frac{6}{8}, \frac{1}{5} = \frac{2}{10}, \frac{3}{9} = \frac{1}{3}$ **6)** $\frac{13}{2}$ **7)** $\frac{6}{5}$ **8)** $\frac{32}{3}$ **9)** $\frac{47}{6}$ **10)** $\frac{411}{4}$ **11)** 2 **12)** 1

13) $3\frac{1}{3}$ **14)** $1\frac{1}{3}$ **15)** $2\frac{3}{4}$ **16)** $\frac{6}{8}$ **17)** $\frac{4}{16}$ **18)** $\frac{8}{12}$ **19)** $\frac{4}{10}$ **20)** $\frac{6}{9}$ **21)** $\frac{1}{100}$ **22)** $\frac{1}{10{,}000}$ **23)** $\frac{5}{9}$ **24)** $\frac{3}{10}$ **25)** $\frac{2}{5}$ bottle **26)** $1\frac{1}{2}$ bottles

27) $\frac{2}{5}$ of the students are men **28)** $\frac{9}{10}$ of the questions were answered correctly **29)** $\frac{1}{2}$ dose **30)** $\frac{1}{2}$ teaspoon

Solutions—Review Set 1

1) Improper fraction: numerator is greater than or equal to denominator

$\frac{6}{6}, \frac{7}{5}$

2) Complex fraction: numerator and/or denominator is a fraction

$\frac{\frac{1}{100}}{\frac{1}{150}}$

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3) Proper fraction: numerator is less than denominator and value is less than 1

$\frac{1}{4}, \frac{1}{14}$

4) Mixed number reduced to lowest terms: whole number + reduced fraction

$1\frac{2}{9}, 1\frac{1}{4}, 5\frac{7}{8}$

5) $\frac{3}{4} = \frac{3\times2}{4\times2} = \frac{6}{8}$; $\frac{3}{4} = \frac{6}{8}$

$\frac{1}{5} = \frac{1\times2}{5\times2} = \frac{2}{10}$; $\frac{1}{5} = \frac{2}{10}$

$\frac{3}{9} = \frac{3\div3}{9\div3} = \frac{1}{3}$; $\frac{3}{9} = \frac{1}{3}$

6) $6\frac{1}{2} = \frac{(6\times2)+1}{2} = \frac{13}{2}$

7) $1\frac{1}{5} = \frac{(1\times5)+1}{5} = \frac{6}{5}$

8) $10\frac{2}{3} = \frac{(10\times3)+2}{3} = \frac{32}{3}$

9) $7\frac{5}{6} = \frac{(7\times6)+5}{6} = \frac{47}{6}$

10) $102\frac{3}{4} = \frac{(102\times4)+3}{4} = \frac{411}{4}$

11) $\frac{24}{12} = 12\overline{)24}$ $\quad 2$, $\quad \underline{24}$

12) $\frac{\overset{1}{\cancel{8}}}{\underset{1}{\cancel{8}}} = 1$

13) $\frac{30}{9} = 9\overline{)30}$ $\quad 3\frac{3}{9}$, $\quad \underline{27}$, $\quad 3$

$3\frac{3}{9} = 3\frac{1}{3}$

14) $\frac{100}{75} = 1\frac{25}{75} = 1\frac{1}{3}$

15) $\frac{44}{16} = 16\overline{)44}$ $\quad 2\frac{12}{16}$, $\quad \underline{32}$, $\quad 12$

$2\frac{12}{16} = 2\frac{3}{4}$

16) $\frac{3}{4} = \frac{3\times2}{4\times2} = \frac{6}{8}$

17) $\frac{1}{4} = \frac{1\times4}{4\times4} = \frac{4}{16}$

18) $\frac{2}{3} \times \frac{2\times4}{3\times4} = \frac{8}{12}$

19) $\frac{2}{5} = \frac{2\times2}{5\times2} = \frac{4}{10}$

20) $\frac{2}{3} = \frac{2\times3}{3\times3} = \frac{6}{9}$

21) $\frac{1}{100}$ is larger than $\frac{1}{150}$

The numerators are the same. The fraction with the smaller denominator has the greater value.

22) $\frac{1}{10{,}000}$ is smaller than $\frac{1}{1{,}000}$

23) $\frac{5}{9}$ is larger than $\frac{2}{9}$

The denominators are both the same. The fraction with the larger numerator has the greater value.

24) $\frac{3}{10}$ is smaller than $\frac{5}{10}$

25) 10 fluid ounces – 6 fluid ounces = 4 fluid ounces remaining

$\frac{\overset{2}{\cancel{4}}}{\underset{5}{\cancel{10}}} = \frac{2}{5}$ bottle remaining

26) $\frac{1 \text{ bottle}}{12 \text{ doses}} \times \frac{X \text{ bottles}}{18 \text{ doses}}$

$12X = 18$

$\frac{12X}{12} = \frac{18}{12}$

$X = 1\frac{6}{12} = 1\frac{1}{2}$ bottles

27)
$$\begin{array}{rl} 24 & \text{men} \\ +\ 36 & \text{women} \\ \hline 60 & \text{people in class} \end{array}$$

The men represent $\frac{24}{60}$ or $\frac{2}{5}$ of the students in the class.

28) $\frac{18}{20} = \frac{18\div2}{20\div2} = \frac{9}{10}$

29) $\frac{160 \text{ mg}}{1 \text{ dose}} \times \frac{80 \text{ mg}}{X \text{ doses}}$

$160X = 80$

$\frac{160X}{160} = \frac{80}{160}$

$X = \frac{1}{2}$ dose

30) $\frac{160 \text{ mg}}{1 \text{ t}} \times \frac{80 \text{ mg}}{X \text{ t}}$

$160X = 80$

$\frac{160X}{160} = \frac{80}{160}$

$X = \frac{1}{2}$ teaspoon

Review Set 2 from pages 40–41

1) $8\frac{7}{15}$ **2)** $1\frac{5}{12}$ **3)** $17\frac{5}{24}$ **4)** $1\frac{1}{24}$ **5)** $32\frac{5}{6}$ **6)** $5\frac{7}{12}$ **7)** $1\frac{1}{3}$ **8)** $5\frac{53}{72}$ **9)** 43 **10)** $5\frac{118}{119}$ **11)** $2\frac{8}{15}$ **12)** $\frac{53}{132}$ **13)** $\frac{1}{2}$ **14)** $4\frac{5}{6}$ **15)** $\frac{1}{24}$ **16)** $63\frac{2}{3}$ **17)** $299\frac{4}{5}$ **18)** $\frac{1}{6}$ **19)** $1\frac{2}{5}$ **20)** $7\frac{1}{16}$ **21)** $7\frac{2}{9}$ **22)** $1\frac{1}{4}$ **23)** $24\frac{6}{11}$ **24)** $\frac{7}{12}$ **25)** $\frac{1}{25}$ **26)** $5\frac{5}{6}$ fluid ounces **27)** $1\frac{1}{8}$ inches **28)** 8 inches **29)** $21\frac{1}{2}$ pints **30)** $13\frac{1}{4}$ pounds

Solutions—Review Set 2

1) $7\frac{4}{5}+\frac{2}{3}$

$$7\frac{12}{15}$$
$$+\frac{10}{15}$$
$$7\frac{22}{15}=8\frac{7}{15}$$

2) $\frac{3}{4}+\frac{2}{3}$

$$\frac{3}{4}=\frac{9}{12}$$
$$\frac{2}{3}=+\frac{8}{12}$$
$$\frac{17}{12}=1\frac{5}{12}$$

3) $4\frac{2}{3}+5\frac{1}{24}+7\frac{1}{2}$

$$4\frac{16}{24}$$
$$5\frac{1}{24}$$
$$+\ 7\frac{12}{24}$$
$$16\frac{29}{24}=17\frac{5}{24}$$

4) $\frac{3}{4}+\frac{1}{8}+\frac{1}{6}=\frac{18}{24}+\frac{3}{24}+\frac{4}{24}=\frac{18+3+4}{24}=\frac{25}{24}=1\frac{1}{24}$

5) $12\frac{1}{2}+20\frac{1}{3}$

$$12\frac{1}{2}=12\frac{3}{6}$$
$$+20\frac{1}{3}=+20\frac{2}{6}$$
$$32\frac{5}{6}$$

6) $\frac{1}{4}+5\frac{1}{3}$

$$\frac{1}{4}=\frac{3}{12}$$
$$+5\frac{1}{3}=+5\frac{4}{12}$$
$$5\frac{7}{12}$$

7) $\frac{1}{7}+\frac{2}{3}+\frac{11}{21}$

$$\frac{1}{7}=\frac{3}{21}$$
$$\frac{2}{3}=\frac{14}{21}$$
$$+\frac{11}{21}=+\frac{11}{21}$$
$$\frac{28}{21}=1\frac{7}{21}=1\frac{1}{3}$$

8) $\frac{4}{9}+\frac{5}{8}+4\frac{2}{3}$

$$\frac{4}{9}=\frac{32}{72}$$
$$\frac{5}{8}=\frac{45}{72}$$
$$+4\frac{2}{3}=+4\frac{48}{72}$$
$$4\frac{125}{72}=5\frac{53}{72}$$

9) $34\frac{1}{2}+8\frac{1}{2}$

$$34\frac{1}{2}$$
$$+\ 8\frac{1}{2}$$
$$42\frac{2}{2}=43$$

10) $\frac{12}{17}+5\frac{2}{7}$

$$\frac{12}{17}=\frac{84}{119}$$
$$+5\frac{2}{7}=+5\frac{34}{119}$$
$$5\frac{118}{119}$$

11) $\frac{6}{5}+1\frac{1}{3}$

$$\frac{6}{5}=\frac{18}{15}$$
$$+1\frac{1}{3}=+1\frac{5}{15}$$
$$1\frac{23}{15}=2\frac{8}{15}$$

12) $\frac{1}{4}+\frac{5}{33}$

$$\frac{1}{4}=\frac{33}{132}$$
$$+\frac{5}{33}=+\frac{20}{132}$$
$$\frac{53}{132}$$

13) $\frac{3}{4}-\frac{1}{4}$

$$\frac{3}{4}$$
$$-\frac{1}{4}$$
$$\frac{2}{4}=\frac{1}{2}$$

14) $8\frac{1}{12}-3\frac{1}{4}=8\frac{1}{12}-3\frac{3}{12}$

$$7\frac{13}{12}$$
$$-3\frac{3}{12}$$
$$4\frac{10}{12}=4\frac{5}{6}$$

15) $\frac{1}{8}-\frac{1}{12}$

$$\frac{1}{8}=\frac{3}{24}$$
$$-\frac{1}{12}=-\frac{2}{24}$$
$$\frac{1}{24}$$

16) $100-36\frac{1}{3}$

$$100=99\frac{3}{3}$$
$$-36\frac{1}{3}=-36\frac{1}{3}$$
$$63\frac{2}{3}$$

17) $355\frac{1}{5}-55\frac{2}{5}$

$$355\frac{1}{5}=354\frac{6}{5}$$
$$-55\frac{2}{5}=-55\frac{2}{5}$$
$$299\frac{4}{5}$$

18) $\frac{1}{3}-\frac{1}{6}$

$$\frac{1}{3}=\frac{2}{6}$$
$$-\frac{1}{6}=-\frac{1}{6}$$
$$\frac{1}{6}$$

19) $2\frac{3}{5}-1\frac{1}{5}$

$$2\frac{3}{5}$$
$$-1\frac{1}{5}$$
$$1\frac{2}{5}$$

20) $14\frac{3}{16}-7\frac{1}{8}$

$$14\frac{3}{16}=14\frac{3}{16}$$
$$-7\frac{1}{8}=-7\frac{2}{16}$$
$$7\frac{1}{16}$$

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21) $25-17\frac{7}{9}$

$$\begin{array}{r} 25 = 24\frac{9}{9} \\ -17\frac{7}{9} = -17\frac{7}{9} \\ \hline 7\frac{2}{9} \end{array}$$

22) $4\frac{7}{10}-3\frac{9}{20}$

$$\begin{array}{r} 4\frac{7}{10} = 4\frac{14}{20} \\ -3\frac{9}{20} = -3\frac{9}{20} \\ \hline 1\frac{5}{20} = 1\frac{1}{4} \end{array}$$

23) $48\frac{6}{11}-24$

$$\begin{array}{r} 48\frac{6}{11} \\ -24 \\ \hline 24\frac{6}{11} \end{array}$$

24) $1\frac{2}{3}-1\frac{1}{12}$

$$\begin{array}{r} 1\frac{2}{3} = 1\frac{8}{12} \\ -1\frac{1}{12} = -1\frac{1}{12} \\ \hline \frac{7}{12} \end{array}$$

25) 50 pounds – 48 pounds = 2 pounds lost

$\frac{2}{50} = \frac{1}{25}$ of weight lost

26) $2\frac{1}{2}$ fluid ounces + $3\frac{1}{3}$ fluid ounces =

$2\frac{3}{6} + 3\frac{2}{6} = 5\frac{5}{6}$ fluid ounces

27) $\frac{1}{2}\text{inch}+\frac{1}{4}\text{inch}+\frac{3}{8}\text{inch}$ = total growth for 3 months

$$\begin{array}{r} \frac{1}{2} = \frac{4}{8} \\ \frac{1}{4} = \frac{2}{8} \\ +\frac{3}{8} = +\frac{3}{8} \\ \hline \frac{9}{8} = 1\frac{1}{8} \text{ inches grown} \end{array}$$

28) $11 \text{ inches} - \left(1\frac{1}{2} \text{ inches} + 1\frac{1}{2} \text{ inches}\right)$

$$\begin{array}{r} 1\frac{1}{2} \\ +1\frac{1}{2} \\ \hline 2\frac{2}{2} = 3 \text{ inches in the margins} \end{array}$$

$11-3=8$ inches vertical area available to write

29) $56 - 34\frac{1}{2}$

$$\begin{array}{r} 55\frac{2}{2} \\ -34\frac{1}{2} \\ \hline 21\frac{1}{2} \text{ pints} \end{array}$$

30) $20\frac{1}{2}-7\frac{1}{4}$

$$\begin{array}{r} 20\frac{2}{4} \\ -7\frac{1}{4} \\ \hline 13\frac{1}{4} \text{ pounds} \end{array}$$

Review Set 3 from pages 45–46

1) $\frac{1}{40}$ **2)** $\frac{36}{125}$ **3)** $\frac{35}{48}$ **4)** $\frac{3}{100}$ **5)** 3 **6)** $1\frac{2}{3}$ **7)** $\frac{4}{5}$ **8)** $6\frac{8}{15}$ **9)** $\frac{1}{2}$ **10)** $23\frac{19}{36}$ **11)** $\frac{3}{32}$ **12)** $254\frac{1}{6}$ **13)** 3 **14)** $1\frac{34}{39}$ **15)** $\frac{3}{14}$ **16)** $\frac{1}{11}$ **17)** $\frac{1}{2}$
18) $\frac{1}{30}$ **19)** $3\frac{1}{3}$ **20)** $\frac{3}{20}$ **21)** $\frac{1}{3}$ **22)** $\frac{7}{12}$ **23)** $1\frac{1}{9}$ **24)** 60 calories **25)** 560 seconds **26)** 40 doses **27)** $31\frac{1}{2}$ tablets
28) 1,275 milliliters **29)** $52\frac{1}{2}$ ounces **30)** 6 full days

Solutions—Review Set 3

1) $\frac{3}{10}\times\frac{1}{12}$

$$\frac{\overset{1}{\cancel{3}}}{10}\times\frac{1}{\underset{4}{\cancel{12}}} = \frac{1}{40}$$

2) $\frac{12}{25}\times\frac{3}{5} = \frac{36}{125}$

3) $\frac{5}{8}\times 1\frac{1}{6} = \frac{5}{8}\times\frac{7}{6} = \frac{35}{48}$

4) $\frac{1}{100}\times 3 = \frac{1}{100}\times\frac{3}{1} = \frac{3}{100}$

5) $\frac{\frac{1}{6}}{\frac{1}{4}}\times\frac{3}{\frac{2}{3}} = \left(\frac{1}{6}\times\frac{4}{1}\right)\times\left(\frac{3}{1}\times\frac{3}{2}\right) = \frac{\overset{2}{\cancel{4}}}{\underset{3}{\cancel{6}}}\times\frac{9}{2} = \frac{\overset{3}{\cancel{18}}}{\underset{1}{\cancel{6}}} = 3$

6) $\frac{\frac{1}{150}}{\frac{1}{100}}\times 2\frac{1}{2} = \left(\frac{1}{150}\div\frac{1}{100}\right)\times\frac{5}{2} = \left(\frac{1}{\underset{3}{\cancel{150}}}\times\frac{\overset{2}{\cancel{100}}}{1}\right)\times\frac{5}{2}$

$$= \frac{1}{3}\times\frac{\overset{1}{\cancel{2}}}{1}\times\frac{5}{\underset{1}{\cancel{2}}} = \frac{5}{3} = 1\frac{2}{3}$$

7) $\frac{30}{75}\times 2 = \frac{\overset{2}{\cancel{30}}}{\underset{5}{\cancel{75}}}\times\frac{2}{1} = \frac{4}{5}$

8) $9\frac{4}{5}\times\frac{2}{3} = \frac{49}{5}\times\frac{2}{3} = \frac{98}{15} = 6\frac{8}{15}$

9) $\frac{3}{4}\times\frac{2}{3} = \frac{\overset{1}{\cancel{3}}}{\underset{2}{\cancel{4}}}\times\frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} = \frac{1}{2}$

10) $4\frac{2}{3}\times 5\frac{1}{24} = \frac{\overset{7}{\cancel{14}}}{3}\times\frac{121}{\underset{12}{\cancel{24}}} = \frac{847}{36} = 23\frac{19}{36}$

11) $\frac{3}{4}\times\frac{1}{8} = \frac{3}{32}$

12) $12\frac{1}{2}\times 20\frac{1}{3} = \frac{25}{2}\times\frac{61}{3} = \frac{1525}{6} = 254\frac{1}{6}$

13) $\frac{3}{4}\div\frac{1}{4} = \frac{3}{\underset{1}{\cancel{4}}}\times\frac{\overset{1}{\cancel{4}}}{1} = \frac{3}{1} = 3$

14) $6\frac{1}{12} \div 3\frac{1}{4} = \frac{73}{12} \div \frac{13}{4} = \frac{73}{\cancel{12}_{3}} \times \frac{\overset{1}{\cancel{4}}}{13} = \frac{73}{39} = 1\frac{34}{39}$

15) $\frac{1}{8} \div \frac{7}{12} = \frac{1}{\cancel{8}_{2}} \times \frac{\overset{3}{\cancel{12}}}{7} = \frac{3}{14}$

16) $\frac{1}{33} \div \frac{1}{3} = \frac{1}{33} \times \frac{3}{1} = \frac{3}{33} = \frac{1}{11}$

17) $5\frac{1}{4} \div 10\frac{1}{2} = \frac{21}{4} \div \frac{21}{2} = \frac{\overset{1}{\cancel{21}}}{\cancel{4}_{2}} \times \frac{\overset{1}{\cancel{2}}}{\cancel{21}_{1}} = \frac{1}{2}$

18) $\frac{1}{60} \div \frac{1}{2} = \frac{1}{\cancel{60}_{30}} \times \frac{\overset{1}{\cancel{2}}}{1} = \frac{1}{30}$

19) $2\frac{1}{2} \div \frac{3}{4} = \frac{5}{2} \div \frac{3}{4} = \frac{5}{\cancel{2}_{1}} \times \frac{\overset{2}{\cancel{4}}}{3} = \frac{10}{3} = 3\frac{1}{3}$

20) $\frac{\frac{1}{20}}{\frac{1}{3}} = \frac{1}{20} \div \frac{1}{3} = \frac{1}{20} \times \frac{3}{1} = \frac{3}{20}$

21) $\frac{1}{150} \div \frac{1}{50} = \frac{1}{\cancel{150}_{3}} \times \frac{\overset{1}{\cancel{50}}}{1} = \frac{1}{3}$

22) $\frac{7}{8} \div 1\frac{1}{2} = \frac{7}{8} \div \frac{3}{2} = \frac{7}{\cancel{8}_{4}} \times \frac{\overset{1}{\cancel{2}}}{3} = \frac{7}{12}$

23) $\frac{\frac{3}{5}}{\frac{3}{4}} \div \frac{\frac{4}{5}}{1\frac{1}{9}} = \left(\frac{3}{5} \times \frac{4}{3}\right) \div \left(\frac{4}{5} \div \frac{10}{9}\right)$

$= \left(\frac{\overset{1}{\cancel{3}}}{5} \times \frac{4}{\cancel{3}_{1}}\right) \div \left(\frac{4}{5} \times \frac{9}{10}\right)$

$= \frac{4}{5} \div \frac{36}{50} = \frac{\overset{1}{\cancel{4}}}{\cancel{5}_{1}} \times \frac{\overset{10}{\cancel{50}}}{\cancel{36}_{9}} = \frac{10}{9} = 1\frac{1}{9}$

24) $\frac{80 \text{ calories}}{1 \text{ apple}} \times \frac{X \text{ calories}}{\frac{3}{4} \text{ apple}}$

$X = \frac{3}{\cancel{4}_{1}} \times \overset{20}{\cancel{80}}$

$X = 60$ calories

25) $\frac{60 \text{ sec}}{1 \text{ min}} \times \frac{X \text{ sec}}{9\frac{1}{3} \text{ min}}$

$X = 9\frac{1}{3} \times 60 = \frac{28}{\cancel{3}_{1}} \times \overset{20}{\cancel{60}} = 560$

$X = 560$ seconds

26) $\frac{\frac{1}{2} \text{ t}}{1 \text{ dose}} = \frac{20 \text{ t}}{X \text{ doses}}$

$\frac{1}{2}X = 20$

$\frac{\frac{1}{2}X}{\frac{1}{2}} = \frac{20}{\frac{1}{2}}$

$X = 20 \div \frac{1}{2} = \frac{20}{1} \times \frac{2}{1} = 40$ doses

27) $3 \times 7 = 21$ doses

$21 \times 1\frac{1}{2}$ tablets =

$\frac{21}{1} \times \frac{3}{2} = \frac{63}{2} =$

$31\frac{1}{2}$ tablets

28) $\frac{1}{3}$ full means the patient drank $\frac{2}{3}$ pitcher;

$\frac{2}{3}$ pitcher $= 850$ mL

$\frac{\frac{2}{3} \text{ pitcher}}{850 \text{ mL}} \times \frac{1 \text{ pitcher}}{X \text{ mL}}$

$\frac{2}{3}X = 850$

$\frac{\frac{2}{3}X}{\frac{2}{3}} = \frac{850}{\frac{2}{3}}$

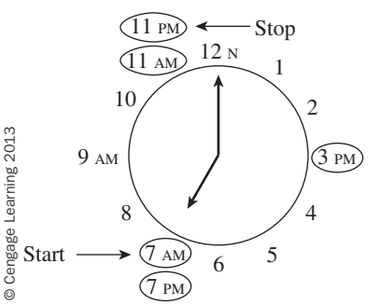
$X = 850 \div \frac{2}{3} = \frac{850}{1} \times \frac{3}{2} = \frac{2{,}550}{2} = 1{,}275$ mL

29) $\frac{1 \text{ tube}}{\frac{7}{10} \text{ ounce}} \times \frac{75 \text{ tubes}}{X \text{ ounces}}$

$X = \frac{7}{\cancel{10}_{2}} \times \frac{\overset{15}{\cancel{75}}}{1} = \frac{105}{2}$

$X = 52\frac{1}{2}$ ounces

30)



Daily doses would be taken at: 7 AM, 11 AM, 3 PM, 7 PM, and 11 PM for 5 doses/day.

5 doses/day $\times \frac{1}{2}$ fluid ounce/dose $= \frac{5}{2} =$

$2\frac{1}{2}$ fluid ounces/day

16 fluid ounces $\div 2\frac{1}{2}$ fluid ounces/day $= \frac{16}{1} \div \frac{5}{2} =$

$\frac{16}{1} \times \frac{2}{5} = \frac{32}{5} = 6\frac{2}{5}$ days or 6 full days

Review Set 4 from pages 52–53

1) 0.2, two tenths **2)** $\frac{17}{20}$, 0.85 **3)** $1\frac{1}{20}$, one and five hundredths **4)** $\frac{3}{500}$, six thousandths **5)** 10.015, ten and fifteen thousandths **6)** $1\frac{9}{10}$, one and nine tenths **7)** $5\frac{1}{10}$, 5.1 **8)** 0.8, eight tenths **9)** $250\frac{1}{2}$, two hundred fifty and five tenths **10)** 33.03, thirty-three and three hundredths **11)** $\frac{19}{20}$, ninety-five hundredths **12)** 2.75, two and seventy-five hundredths **13)** $7\frac{1}{200}$, 7.005 **14)** 0.084, eighty-four thousandths **15)** $12\frac{1}{8}$, twelve and one hundred twenty-five thousandths **16)** $20\frac{9}{100}$, twenty and nine hundredths **17)** $22\frac{11}{500}$, 22.022 **18)** $\frac{3}{20}$, fifteen hundredths **19)** 1,000.005, one thousand and five thousandths **20)** $4{,}085\frac{3}{40}$, 4,085.075 **21)** 0.0170 **22)** 0.25 **23)** 0.75 **24)** $\frac{9}{200}$ **25)** 0.12 **26)** 0.063 **27)** False **28)** False **29)** True **30)** 0.8 gram and 1.25 grams

Solutions—Review Set 4

1) Decimal

$$\begin{array}{r} 0.2 \\ \frac{1}{5} = 5\overline{)1.0} \\ \underline{1\,0} \\ 0 \end{array}$$

$\frac{1}{5} = 0.2$

Read: two tenths

2) Fraction

$\frac{85}{100} = \frac{17}{20}$

Decimal

$$\begin{array}{r} 0.85 \\ \frac{85}{100} = 100\overline{)85.0} \\ \underline{80\,0} \\ 5\,00 \\ \underline{5\,00} \end{array}$$

3) Fraction

$1.05 = 1\frac{5}{100} = 1\frac{1}{20}$

Read: one and five hundredths

4) Fraction

$0.006 = \frac{6}{1{,}000} = \frac{3}{500}$

Read: six thousandths

5) Decimal

$$\begin{array}{r} 10.015 \\ 10\frac{3}{200} = \frac{2003}{200} = 200\overline{)2{,}003.000} \\ \underline{2\,00\downarrow} \\ 03 \\ \underline{0\downarrow} \\ 30 \\ \underline{0\downarrow} \\ 300 \\ \underline{200\downarrow} \\ 1000 \\ \underline{1000} \end{array}$$

Read: ten and fifteen thousandths

6) Fraction

$1.9 = 1\frac{9}{10}$

Read: one and nine tenths

7) Fraction

five and one tenth $= 5\frac{1}{10}$

Decimal

$$\begin{array}{r} 5.1 \\ 5\frac{1}{10} = \frac{51}{10} = 10\overline{)51.0} = 5.1 \\ \underline{50\downarrow} \\ 1\,0 \\ \underline{1\,0} \end{array}$$

8) Decimal

$$\begin{array}{r} 0.8 \\ \frac{4}{5} = 5\overline{)4.0} \end{array}$$

Read: eight tenths

9) Fraction

$250.5 = 250\frac{5}{10} = 250\frac{1}{2}$

Read: two hundred fifty and five tenths

10) Decimal

$$\begin{array}{r} 33.03 \\ 33\frac{3}{100} = \frac{3303}{100} = 100\overline{)3{,}303.00} \\ \underline{3\,00\downarrow} \\ 303 \\ \underline{300\downarrow} \\ 3\,0 \\ \underline{0\downarrow} \\ 3\,00 \\ \underline{3\,00} \end{array}$$

Read: thirty-three and three hundredths

11) Fraction

$0.95 = \frac{95}{100} = \frac{19}{20}$

Read: ninety-five hundredths

12) Decimal

$$\begin{array}{r} 2.75 \\ 2\frac{3}{4} = \frac{11}{4} = 4\overline{)11.00} \\ \underline{8\downarrow} \\ 3\,0 \\ \underline{2\,8\downarrow} \\ 20 \\ \underline{20} \end{array}$$

Read: two and seventy-five hundredths

13) Fraction

seven and five thousandths $= 7\frac{5}{1{,}000} = 7\frac{1}{200}$

Decimal

$$7\frac{5}{1{,}000} = \frac{7{,}005}{1{,}000} = 1{,}000\overline{)7{,}005.000}$$

$$\begin{array}{r} 7.005 \\ 7{,}000\downarrow \\ \hline 5\ 0 \\ 0\downarrow \\ \hline 5\ 00 \\ 0\downarrow \\ \hline 5{,}000 \\ 5{,}000 \\ \hline \end{array}$$

14) Decimal

$$\frac{21}{250} = 250\overline{)21.000}$$

$$\begin{array}{r} 0.084 \\ \hline 20\ 00 \\ \hline 1\ 000 \\ 1\ 000 \\ \hline \end{array}$$

Read: eighty-four thousandths

15) Fraction

$$12.125 = 12\frac{125}{1{,}000} = 12\frac{1}{8}$$

Read: twelve and one hundred twenty-five thousandths

16) Fraction

$$20.09 = 20\frac{9}{100}$$

Read: twenty and nine hundredths

17) Fraction

twenty-two and twenty-two thousandths

$= 22\frac{22}{1{,}000} = 22\frac{11}{500}$

Decimal

$$22\frac{22}{1{,}000} = \frac{22{,}022}{1{,}000} = 1{,}000\overline{)22{,}022.000}$$

$$\begin{array}{r} 22.022 \\ 20\ 00\downarrow \\ \hline 2\ 022 \\ 2\ 000 \\ \hline 22\ 0 \\ 0\downarrow \\ \hline 22\ 00 \\ 20\ 00\downarrow \\ \hline 2\ 000 \\ 2\ 000 \\ \hline \end{array}$$

18) Fraction

$$0.15 = \frac{15}{100} = \frac{3}{20}$$

Read: fifteen hundredths

19) Decimal

$$1{,}000\frac{1}{200} = \frac{200{,}001}{200} = 200\overline{)200{,}001.000}$$

$$\begin{array}{r} 1{,}000.005 \\ 200\downarrow \\ \hline 0\ 0 \\ 0\downarrow \\ \hline 00 \\ 0\downarrow \\ \hline 01 \\ 0\downarrow \\ \hline 1\ 0 \\ 0\downarrow \\ \hline 1\ 00 \\ 0\downarrow \\ \hline 1\ 000 \\ 1\ 000 \\ \hline \end{array}$$

Read: one thousand and five thousandths

20) Fraction

four thousand eighty-five and

seventy-five thousandths

$= 4{,}085\frac{75}{1{,}000} = 4{,}085\frac{3}{40}$

Decimal: This conversion can be worked like #19, however this is shorter for a problem where the denominator is a power of 10.

$$4{,}085\frac{75}{1{,}000} = 4{,}085 + (75 \div 1{,}000)$$

$$= 4{,}085 + 0.075. = 4{,}085.075$$

21) $0.017 = 0.\underline{0170}$

four place decimal

22) $0.2500 = 0.\underline{25}$

two place decimal

23) $\frac{75}{100} = 100\overline{)75.00}$

$$\begin{array}{r} 0.75 \\ \hline 70\ 0\downarrow \\ \hline 5\ 00 \\ 5\ 00 \\ \hline \end{array}$$

24) $0.045 = \frac{45}{1{,}000} = \frac{9}{200}$

tenths
hundredths
thousandths

25) 0.012
0.120
0.021
↑

0.120 is the largest because the 1 in the tenth place is the largest digit in the tenths place, and that is the place where the first nonzero numeral appears.

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26) 0.635
0.6
0.063
↑
0.063 is the smallest because 0 in the tenth place is the smallest

27) $0.375 \neq 0.0375$
False

28) 2.2 grams $\neq$ 2.02 grams
False

29) 6.5 ounces = 6.500 ounces
True

30) Safe dosages include amounts greater than or equal to 0.5 gram but less than or equal to 2 grams.
Safe dosages: 0.8 gram and 1.25 grams

Review Set 5 from pages 55–56

1) 22.585 **2)** 44.177 **3)** 12.309 **4)** 11.3 **5)** 175.199 **6)** 25.007 **7)** 0.518 **8)** $9.48 **9)** $18.91 **10)** $22.71 **11)** 6.403 **12)** 0.27 **13)** 4.15 **14)** 1.51 **15)** 10.25 **16)** 2.517 **17)** 374.35 **18)** 604.42 **19)** 27.449 **20)** 23.619 **21)** 0.697 gram **22)** 66.25 milliliters **23)** $2,058.06 **24)** 10.3 grams **25)** 8.1 hours

Solutions—Review Set 5

1)
$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 0.160 \\ 5.375 \\ 1.050 \\ +16.000 \\ \hline 22.585 \end{array}$$

2)
$$\begin{array}{r} 7.517 \\ 3.200 \\ 0.160 \\ +33.300 \\ \hline 44.177 \end{array}$$

3)
$$\begin{array}{r} {\scriptstyle 2\ 10\ \ \ \ } \\ 13.009 \\ -0.700 \\ \hline 12.309 \end{array}$$

4)
$$\begin{array}{r} {\scriptstyle 1\ 1\ \ \ \ } \\ 5.125 \\ 6.025 \\ +0.150 \\ \hline 11.300 \end{array}$$
$11.300 = 11.3$

5)
$$\begin{array}{r} 175.100 \\ +0.099 \\ \hline 175.199 \end{array}$$

6)
$$\begin{array}{r} {\scriptstyle 9\ \ \ \ } \\ {\scriptstyle 1\,10\,10\ \ \ \ } \\ 25.\cancel{2}\cancel{0}\cancel{0} \\ -0.193 \\ \hline 25.007 \end{array}$$

7)
$$\begin{array}{r} {\scriptstyle 7\,10\ \ \ \ } \\ 0.5\cancel{8}\cancel{0} \\ -0.062 \\ \hline 0.518 \end{array}$$

8)
$$\begin{array}{r} {\scriptstyle 9\,10\,10\ \ \ \ } \\ \$\cancel{1}\cancel{0}.\cancel{1}\cancel{0} \\ -\ 0.62 \\ \hline \$9.48 \end{array}$$

9)
$$\begin{array}{r} {\scriptstyle 8\ 9\,10\ \ \ \ } \\ \$\cancel{1}\cancel{9}.\cancel{0}\cancel{0} \\ -\ 0.09 \\ \hline \$18.91 \end{array}$$

10)
$$\begin{array}{r} {\scriptstyle 1\ \ 2\ \ \ \ } \\ \$5.05 \\ 0.17 \\ +17.49 \\ \hline \$22.71 \end{array}$$

11)
$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 4.000 \\ 1.980 \\ 0.420 \\ +0.003 \\ \hline 6.403 \end{array}$$

12)
$$\begin{array}{r} {\scriptstyle 2\,10\ \ \ \ } \\ 0.\cancel{3}\cancel{0} \\ -\ 0.03 \\ \hline 0.27 \end{array}$$

13)
$$\begin{array}{r} {\scriptstyle 2\,10\ \ \ \ } \\ 16.\cancel{3}\cancel{0} \\ -12.15 \\ \hline 4.15 \end{array}$$

14)
$$\begin{array}{r} {\scriptstyle 1\,14\,10\ \ \ \ } \\ 2.\cancel{5}\cancel{0} \\ -0.99 \\ \hline 1.51 \end{array}$$

15)
$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 5.00 \\ 2.50 \\ 0.05 \\ 0.15 \\ +2.55 \\ \hline 10.25 \end{array}$$

16)
$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ 0.030 \\ 0.160 \\ +2.327 \\ \hline 2.517 \end{array}$$

17)
$$\begin{array}{r} {\scriptstyle 6\,9\,9\,9\,10} \\ \cancel{7}\cancel{0}\cancel{0}.\cancel{0}\cancel{0} \\ -325.65 \\ \hline 374.35 \end{array}$$

18)
$$\begin{array}{r} {\scriptstyle 4\ 13} \\ 64\cancel{5}.\cancel{3}2 \\ -40.90 \\ \hline 604.42 \end{array}$$

19)
$$\begin{array}{r} {\scriptstyle 1\quad 1} \\ 18.000 \\ 2.350 \\ 7.006 \\ +0.093 \\ \hline 27.449 \end{array}$$

20)
$$\begin{array}{r} {\scriptstyle 1} \\ 13.529 \\ +10.090 \\ \hline 23.619 \end{array}$$

21)
$$\begin{array}{r} 0.100 \\ 0.125 \\ 0.001 \\ 0.350 \\ +0.121 \\ \hline 0.697 \text{ grams} \end{array}$$

22)
$$\begin{array}{r} {\scriptstyle 2\ 1} \\ 7.50 \\ 15.00 \\ 10.00 \\ 15.00 \\ 6.25 \\ +12.50 \\ \hline 66.25 \quad \text{milliliters} \end{array}$$

23)
$$\begin{array}{r} {\scriptstyle 6\,10\ \ 3\,13} \\ \$16,\cancel{7}\cancel{0}9.\cancel{4}\cancel{3} \\ -14,651.37 \\ \hline \$2,058.06 \end{array}$$

24)
$$\begin{array}{r} 14.8 \\ -4.5 \\ \hline 10.3 \text{ grams} \end{array}$$

25)
$$\begin{array}{rr} 3\text{ h} & 20\text{ min} \\ & 40\text{ min} \\ 3\text{ h} & 30\text{ min} \\ & 24\text{ min} \\ + & 12\text{ min} \\ \hline 6\text{ h} & 126\text{ min} \end{array}$$

126 min = 2 h 6 min

6 h 126 min = 6 h + 2 h 6 min = 8 h 6 min =
1 h = 60 min

$8\text{ h } 6\text{ min} = 8\frac{6}{60} = 8\frac{1}{10} = 8.1$ hours

Review Set 6 from page 60

1) 5.83 **2)** 2.2 **3)** 42.75 **4)** 0.15 **5)** 403.14 **6)** 75,100.75 **7)** 32.86 **8)** 2.78 **9)** 348.58 **10)** 0.02 **11)** 400 **12)** 3.74 **13)** 5
14) 2.98 **15)** 4,120 **16)** 5.45 **17)** 272.67 **18)** 1.5 **19)** 50,020 **20)** 300 **21)** $562.50. = 56{,}250$ **22)** $16.0. = 160$
23) $.025. = 0.025$ **24)** $.032.005 = 0.032005$ **25)** $.00.125 = 0.00125$ **26)** $23.2.5 = 232.5$ **27)** $71.7.717 = 71.7717$
28) $83.1.6 = 831.6$ **29)** $0.33. = 33$ **30)** $14.106. = 14{,}106$

Solutions—Review Set 6

1)
$$\begin{array}{r} {\scriptstyle 3} \\ 1.16 \\ \times 5.03 \\ \hline 348 \\ 0000 \\ 58000 \\ \hline 5.8348 = 5.83 \end{array}$$

2)
$$\begin{array}{r} {\scriptstyle 2} \\ 0.314 \\ \times \quad 7 \\ \hline 2.198 = 2.20 = 2.2 \end{array}$$

3)
$$\begin{array}{r} {\scriptstyle 3} \\ 1.71 \\ \times 25 \\ \hline 8\,55 \\ 34\,20 \\ \hline 42.75 \end{array}$$

4)
$$\begin{array}{r} {\scriptstyle 1} \\ 3.002 \\ \times\ 0.05 \\ \hline 0.15010 = 0.15 \end{array}$$

5)
$$\begin{array}{r} 16.1 \\ \times 25.04 \\ \hline 644 \\ 0000 \\ 80500 \\ 322000 \\ \hline 403.144 = 403.14 \end{array}$$

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6)
$$\begin{array}{r} 75.1 \\ \times 1{,}000.01 \\ \hline 751 \\ 0000 \\ 00000 \\ 000000 \\ 0000000 \\ \hline 75100000 \end{array}$$
$75{,}100.751 = 75{,}100.75$

7)
$$\begin{array}{r} 16.03 \\ \times 2.05 \\ \hline 8015 \\ 0000 \\ \hline 320600 \end{array}$$
$32.8615 = 32.86$

8)
$$\begin{array}{r} {\scriptstyle 2\ 2}\\ 55.50 \\ \times 0.05 \\ \hline \end{array}$$
$2.7750 = 2.78$

9)
$$\begin{array}{r} {\scriptstyle 1\ 1\ 1}\\ 23.2 \\ \times 15.025 \\ \hline 1160 \\ 4640 \\ 00000 \\ 1160000 \\ \hline 2320000 \end{array}$$
$348.5800 = 348.58$

10)
$$\begin{array}{r} 1.14 \\ \times\ 0.014 \\ \hline 456 \\ 114 \\ \hline \end{array}$$
$0.01596 = 0.02$

11) $16 \div 0.04 = 400$

$$\begin{array}{r} 400. \\ 0.04\overline{)16.00.} \\ 16\downarrow \\ \hline 0\ 0\downarrow \\ \hline 00 \\ \hline 0 \end{array}$$

12) $25.3 \div 6.76 = 3.74$

$$\begin{array}{r} 3.742 \\ 6.76\overline{)25.30.000} \\ 20\ 28\downarrow \\ \hline 5\ 02\ 0 \\ 4\ 73\ 2\downarrow \\ \hline 28\ 80 \\ 27\ 04\downarrow \\ \hline 1\ 760 \\ 1\ 352 \end{array}$$

13) $0.02 \div 0.004 = 5$

$$\begin{array}{r} 5. \\ 0.004\overline{)0.020.} \\ \hline 20 \\ \hline 0 \end{array}$$

14) $45.5 \div 15.25 = 2.98$

$$\begin{array}{r} 2.983 \\ 15.25\overline{)45.50.000} \\ 30\ 50\downarrow \\ \hline 15\ 00\ 0 \\ 13\ 72\ 5\downarrow \\ \hline 1\ 27\ 50 \\ 1\ 22\ 00 \\ \hline 5\ 500 \\ 4\ 575 \\ \hline 925 \end{array}$$

15) $515 \div 0.125 = 4{,}120$

$$\begin{array}{r} 4120. \\ 0.125\overline{)515.000.} \\ 500\downarrow \\ \hline 15\ 0 \\ 12\ 5\downarrow \\ \hline 2\ 50 \\ 2\ 50\downarrow \\ \hline 00 \end{array}$$

16) $73 \div 13.40 = 5.45$

$$\begin{array}{r} 5.447 \\ 13.40\overline{)73.00.000} \\ 67\ 00\downarrow \\ \hline 6\ 00\ 0 \\ 5\ 36\ 0\downarrow \\ \hline 64\ 00 \\ 53\ 60\downarrow \\ \hline 10\ 400 \\ 9\ 380 \\ \hline 1\ 020 \end{array}$$

17) $16.36 \div 0.06 = 272.67$

$$\begin{array}{r} 272.666 \\ 0.06\overline{)16.36.000} \\ 12\downarrow \\ \hline 43 \\ 42\downarrow \\ \hline 16 \\ 12\downarrow \\ \hline 4\ 0 \\ 3\ 6\downarrow \\ \hline 40 \\ 36\downarrow \\ \hline 40 \\ 36 \\ \hline 4 \end{array}$$

18) $0.375 \div 0.25 = 1.5$

$$0.25\overset{\curvearrowright}{.}\overset{\curvearrowright}{)}0.37\overset{\curvearrowright}{.}5 \quad 1.5$$
$$25\downarrow$$
$$12\ 5$$
$$12\ 5$$
$$0$$

19) $100.04 \div 0.002 = 50{,}020$

$$.002\overset{\curvearrowright}{.}\overset{\curvearrowright}{)}100.040\overset{\curvearrowright}{.} \quad 50\,020$$
$$10\downarrow\downarrow\downarrow$$
$$00\ 04$$
$$4\downarrow$$
$$00$$
$$0$$

20) $45 \div 0.15 = 300$

$$.15\overset{\curvearrowright}{.}\overset{\curvearrowright}{)}45\overset{\curvearrowright}{.}00\overset{\curvearrowright}{.} \quad 3\,00$$
$$45\downarrow$$
$$0\ 0\downarrow$$
$$00$$

21) $562.5 \times 100 = 562\overset{\curvearrowright}{.}50\overset{\curvearrowright}{.} = 56{,}250$

22) $16 \times 10 = 16\overset{\curvearrowright}{.}0\overset{\curvearrowright}{.} = 160$

23) $25 \div 1{,}000 = \overset{\curvearrowright}{.}025\overset{\curvearrowright}{.} = 0.025$

24) $32.005 \div 1{,}000 = \overset{\curvearrowright}{.}032.005 = 0.032005$

25) $0.125 \div 100 = \overset{\curvearrowright}{.}00.125 = 0.00125$

26) $23.25 \times 10 = 23.2\overset{\curvearrowright}{.}5 = 232.5$

27) $717.717 \div 10 = 71.7\overset{\curvearrowright}{.}717 = 71.7717$

28) $83.16 \times 10 = 83.1\overset{\curvearrowright}{.}6 = 831.6$

29) $0.33 \times 100 = 0.33\overset{\curvearrowright}{.} = 33$

30) $14.106 \times 1{,}000 = 14.106\overset{\curvearrowright}{.} = 14{,}106$

Practice Problems—Chapter 1 from pages 60–62

1) $\frac{7}{20}$ **2)** 0.375 **3)** LCD = 21 **4)** LCD = 55 **5)** LCD = 18 **6)** LCD = 15 **7)** $3\frac{7}{15}$ **8)** $7\frac{29}{60}$ **9)** $\frac{1}{2}$ **10)** $2\frac{7}{24}$ **11)** $\frac{7}{27}$
12) $10\frac{1}{8}$ **13)** $4\frac{4}{17}$ **14)** $\frac{39}{80}$ **15)** $5\frac{1}{55}$ **16)** $5\frac{5}{18}$ **17)** $2\frac{86}{87}$ **18)** $\frac{3}{20}$ **19)** $\frac{1}{3{,}125}$ **20)** $\frac{1}{4}$ **21)** $1\frac{5}{7}$ **22)** $16\frac{1}{32}$ **23)** 60.27 **24)** 66.74
25) 42.98 **26)** 4,833.92 **27)** 190.8 **28)** 19.17 **29)** 9.48 **30)** 7.7 **31)** 42.75 **32)** 300 **33)** 12,930.43 **34)** 3,200.63 **35)** 2
36) 150.96 **37)** $9.716\overset{\curvearrowright}{.} = 9{,}716$ **38)** $\overset{\curvearrowright}{.}50.25 = 0.5025$ **39)** $0.25\overset{\curvearrowright}{.} = 25$ **40)** $5.750\overset{\curvearrowright}{.} = 5{,}750$ **41)** $\overset{\curvearrowright}{.}0.25 = 0.025$
42) $11.5.25 = 115.25$ **43)** 147 fluid ounces **44)** 138 nurses; 46 maintenance/cleaners; 92 technicians; 92 others **45)** False
46) $1,082.79 **47)** $1.46 **48)** 0.31 gram **49)** 800 milliliters **50)** 2.95 kilograms

Solutions—Practice Problems—Chapter 1

1) $0.35 = \frac{35}{100} = \frac{7}{20}$

2)

$$\frac{3}{8} = 8\overset{\curvearrowright}{)}3.000 \quad 0.375$$
$$24\downarrow$$
$$60$$
$$56\downarrow$$
$$40$$
$$40$$

3) $\frac{5}{7}, \frac{2}{3}$

Multiples of 7: 7; 14; 21; 28
Multiples of 3: 3; 6; 9; 12; 15; 18; 21
21 is the smallest number that 7 and 3 go into evenly
21 is the LCD

4) $\frac{1}{5}, \frac{4}{11}$

Multiples of 5: 5; 10; 15; 20; 25; 30; 35; 40; 45; 50; 55
Multiples of 11: 11; 22; 33; 44; 55
55 is the LCD

5) $\frac{4}{9}, \frac{5}{6}$

Multiples of 9: 9; 18
Multiples of 6: 6; 12; 18
18 is the LCD

6) $\frac{1}{3}, \frac{3}{5}$

Multiples of 3: 3; 6; 9; 12; 15
Multiples of 5: 5; 10; 15
15 is the LCD

7) $1\frac{2}{3} + \frac{9}{5}$

$$1\tfrac{2}{3} = 1\tfrac{10}{15}$$
$$+\tfrac{9}{5} = +\tfrac{27}{15}$$
$$1\tfrac{37}{15} = 3\tfrac{7}{15}$$

8) $4\frac{5}{12} + 3\frac{1}{15}$

$$4\tfrac{5}{12} = 4\tfrac{25}{60}$$
$$+3\tfrac{1}{15} = +3\tfrac{4}{60}$$
$$7\tfrac{29}{60}$$

ANSWERS

9) $\frac{7}{9}-\frac{5}{18}$ $\quad \frac{14}{18}$
$-\frac{5}{18}$
$\frac{9}{18}=\frac{1}{2}$

10) $5\frac{1}{6}-2\frac{7}{8}$ $\quad 5\frac{1}{6}=5\frac{4}{24}=4\frac{28}{24}$
$-2\frac{7}{8}=-2\frac{21}{24}=-2\frac{21}{24}$
$2\frac{7}{24}$

11) $\frac{\overset{1}{\cancel{4}}}{9}\times\frac{7}{\underset{3}{\cancel{12}}}=\frac{7}{27}$

12) $1\frac{1}{2}\times6\frac{3}{4}=\frac{3}{2}\times\frac{27}{4}=\frac{81}{8}=10\frac{1}{8}$

13) $7\frac{1}{5}\div1\frac{7}{10}=\frac{36}{5}\div\frac{17}{10}=\frac{\cancel{36}}{\underset{1}{\cancel{5}}}\times\frac{\overset{2}{\cancel{10}}}{17}=\frac{72}{17}=4\frac{4}{17}$

14) $\frac{3}{16}+\frac{3}{10}=\frac{15}{80}+\frac{24}{80}=\frac{39}{80}$

15) $8\frac{4}{11}\div1\frac{2}{3}=\frac{92}{11}\div\frac{5}{3}=\frac{92}{11}\times\frac{3}{5}=\frac{276}{55}=5\frac{1}{55}$

16) $\frac{9\frac{1}{2}}{1\frac{4}{5}}=\frac{\frac{19}{2}}{\frac{9}{5}}=\frac{19}{2}\div\frac{9}{5}=\frac{19}{2}\times\frac{5}{9}=\frac{95}{18}=5\frac{5}{18}$

17) $\frac{13\frac{1}{3}}{4\frac{6}{13}}=\frac{\frac{40}{3}}{\frac{58}{13}}=\frac{40}{3}\div\frac{58}{13}=\frac{\overset{20}{\cancel{40}}}{3}\times\frac{13}{\underset{29}{\cancel{58}}}=\frac{260}{87}=2\frac{86}{87}$

18) $\frac{\frac{1}{10}}{\frac{2}{3}}=\frac{1}{10}\div\frac{2}{3}=\frac{1}{10}\times\frac{3}{2}=\frac{3}{20}$

19) $\frac{1}{125}\times\frac{1}{25}=\frac{1}{3125}$

20) $\frac{\frac{7}{8}}{\frac{1}{3}}\div\frac{3\frac{1}{2}}{\frac{1}{3}}=\left(\frac{7}{8}\div\frac{1}{3}\right)\div\left(3\frac{1}{2}\div\frac{1}{3}\right)$
$=\left(\frac{7}{8}\times\frac{3}{1}\right)\div\left(\frac{7}{2}\times\frac{3}{1}\right)$
$=\frac{21}{8}\div\frac{21}{2}$
$=\frac{\overset{1}{\cancel{21}}}{8}\times\frac{2}{\underset{1}{\cancel{21}}}$
$=\frac{2}{8}$
$=\frac{1}{4}$

21) $\frac{20}{35}\times3=\frac{60}{35}=1\frac{25}{35}=1\frac{5}{7}$

22) $2\frac{1}{4}\times7\frac{1}{8}=\frac{9}{4}\times\frac{57}{8}=\frac{513}{32}=16\frac{1}{32}$

23) $11.33+29.16+19.78$
$\overset{2\ 1\ 1}{11.33}$
29.16
$+\ 19.78$
60.27

24) $93.712-26.97$
$\overset{8\ 12\ 16\ 11}{\cancel{9}\ \cancel{3}\ .\ \cancel{7}\ \cancel{1}\ 2}$
$-2\ 6\ .\ 9\ 7\ 0$
$6\ 6\ .\ 7\ 4\ 2=66.74$

25) $43.69-0.7083$
$\overset{2\ 16\ 8\ 9\ 10}{4\ \cancel{3}\ .\ \cancel{6}\ \cancel{9}\ \cancel{0}\ \cancel{0}}$
$-\ \ 0\ .\ 7\ 0\ 8\ 3$
$4\ 2\ .\ 9\ 8\ 1\ \ 7=42.98$

26) 66.4×72.8
66.4
$\times\ 72.8$
5312
13280
464800
$4833.92=4{,}833.92$

27)
360
$\times\ 0.53$
1080
18000
$190.80=190.8$

28) $268.4\div14=19.17$
19.171
$14\overline{)268.400}$
$14\downarrow$
128
$126\downarrow$
24
$14\downarrow$
100
$98\downarrow$
20

29) $10.10-0.62$
$\overset{9\ 10\ 10}{\cancel{1}\ \cancel{0}\ .\ \cancel{1}\ \cancel{0}}$
$-\ \ 0\ .\ 6\ 2$
$9.\ 4\ 8$

30) $5+2.5+0.05+0.15$
$\overset{1}{5.00}$
2.50
0.05
$+\ 0.15$
$7.70=7.7$

31) 1.71×25
1.71
$\times\ \ 25$
855
3420
42.75

32) $45 \div 0.15 = 300$

$$0.15\overline{)45.00.} = 300.$$

45↓
0 0
00
0 00

33) $2{,}974 \div 0.23 = 12{,}930.43$

$$0.23\overline{)2{,}974.000.00} = 12930.434$$

23
67
46↓
214
207↓
7 0
6 9↓
10
0↓
100
92↓
8 0
6 9↓
1 10
92
18

34) $51.21 \div 0.016 = 3{,}200.63$

$$0.016\overline{)51.210.000} = 3200.625$$

48↓
3 2
3 2↓
1
0↓
10
0↓
10 0
9 6↓
40
32↓
80
80

35) $0.74 \div 0.37 = 2$

$$0.37\overline{)0.74.} = 2.$$

74
0

36) $1.5 + 146.73 + 1.9 + 0.832$

$$\begin{array}{r} {\scriptstyle 2}\\ 1.500\\ 146.730\\ 1.900\\ +\ 0.832\\ \hline 150.962 \end{array} = 150.96$$

37) $9.716 \times 1{,}000 = 9.716. \times 1{,}000 = 9{,}716$

38) $50.25 \div 100 = .50.25 \div 100 = 0.5025$

39) $0.25 \times 100 = 0.25. \times 100 = 25$

40) $5.75 \times 1{,}000 = 5.750. \times 1{,}000 = 5{,}750$

41) $0.25 \div 10 = .0.25 \div 10 = 0.025$

42) $11.525 \times 10 = 11.5.25 \times 10 = 115.25$

43) $3\frac{1}{2}$ fluid ounces/feeding × 6 feedings/day =

21 fluid ounces/day and

21 fluid ounces/day × 7 days/week =

147 fluid ounces in one week

44) $\frac{3}{8} \times \frac{368}{1} = \frac{1{,}104}{8} = 138$ nurses

$\frac{1}{8} \times \frac{368}{1} = \frac{368}{8} = 46$ maintenance/cleaners

$\frac{1}{4} \times \frac{368}{1} = \frac{368}{4} = 92$ technicians and 92 others

45) False $1\frac{2}{32} = \frac{34}{32} = 1.0625$

Normal range of 1.01 to 1.025

1.0625 is not within the normal range.

(It is higher than the normal range.)

$$32\overline{)34.0000} = 1.0625$$

32↓↓↓
2 00
1 92↓
80
64↓
160
160
0

46)

$20.43
× 40
$817.20 earned for 40 hours

Twice the hourly rate = $20.43 × 2 = $40.86 per overtime hour

$40.86
× 6.50
$265.59 = $265.59 earned at twice the hourly rate for 6.5 overtime hours.

Total pay:

$$\begin{array}{r} {\scriptstyle 1}\\ \$817.20\\ +265.59\\ \hline \$1{,}082.79 \end{array}$$

47) A case of 12 boxes with 12 catheters per box =

144 catheters

By the case: $975 ÷ 144 = $6.77 per catheter

By the box: $98.76 ÷ 12 = $8.23 per catheter

$8.23
– 6.77
$1.46 savings per catheter

ANSWERS

48) 0.065 gram/ounce × 4.75 ounces = 0.31 gram

49) $1{,}200 \text{ milliliters} \times \frac{2}{3} = \frac{\overset{400}{\cancel{1{,}200}}}{1} \times \frac{2}{\underset{1}{\cancel{3}}} = 800 \text{ milliliters}$

50)
$$\begin{array}{r} \overset{5}{\cancel{6}}\,\overset{16}{\cancel{.6}}5 \text{ kilograms} \\ -\ 3.70 \text{ kilograms} \\ \hline 2.95 \text{ kilograms gained} \end{array}$$

Review Set 7 from pages 67–68

1) $\frac{1}{50}$ **2)** $\frac{3}{5}$ **3)** $\frac{1}{3}$ **4)** $\frac{4}{7}$ **5)** $\frac{3}{4}$ **6)** 0.5 **7)** 0.15 **8)** 0.14 **9)** 0.07 **10)** 0.24 **11)** 25% **12)** 40% **13)** 12.5% **14)** 70% **15)** 50%
16) $\frac{9}{20}$ **17)** $\frac{3}{5}$ **18)** $\frac{1}{200}$ **19)** $\frac{1}{100}$ **20)** $\frac{2}{3}$ **21)** 0.03 **22)** 0.05 **23)** 0.06 **24)** 0.33 **25)** 0.01 **26)** 4:25 **27)** 1:4 **28)** 1:2 **29)** 9:20
30) 3:50 **31)** 0.9 **32)** $\frac{1}{5}$ **33)** 0.25% **34)** 0.5 **35)** $\frac{1}{100}$

Solutions—Review Set 7

1) $3{:}150 = \frac{3}{150} = \frac{\overset{1}{\cancel{3}}}{\underset{50}{\cancel{150}}} = \frac{1}{50}$

2) $6{:}10 = \frac{6}{10} = \frac{\overset{3}{\cancel{6}}}{\underset{5}{\cancel{10}}} = \frac{3}{5}$

3) $0.05{:}0.15 = \frac{\overset{1}{\cancel{0.05}}}{\underset{3}{\cancel{0.15}}} = \frac{1}{3}$

4) $4{:}7 = \frac{4}{7}$

5) $6{:}8 = \frac{6}{8} = \frac{\overset{3}{\cancel{6}}}{\underset{4}{\cancel{8}}} = \frac{3}{4}$

6) $20{:}40 = \frac{20}{40} = \frac{\overset{1}{\cancel{20}}}{\underset{2}{\cancel{40}}}$ $\quad \frac{1}{2} = 2\overline{)1.0}\ 0.5 = 0.5$ (1 0)

7) $\frac{1}{1{,}000} : \frac{1}{150} = \frac{\frac{1}{1{,}000}}{\frac{1}{150}} = \frac{1}{1{,}000} \div \frac{1}{150} = \frac{1}{\underset{100}{\cancel{1{,}000}}} \times \frac{\overset{15}{\cancel{150}}}{1}$
$= \frac{15}{100} = 0.15. = 0.15$

8) $0.12{:}0.88 = \frac{0.12}{0.88}$ $\quad 0.88\overline{)12.000} = 0.136 = 0.14$

8 8	
3 20	
2 64	
560	
528	
32	

9) $0.3{:}4.5 = \frac{0.3}{4.5}$ $\quad 4.5\overline{)0.3.000} = 0.066 = 0.07$

2 70	
300	
270	
30	

10) $1\frac{1}{2} : 6\frac{2}{9} = \frac{1\frac{1}{2}}{6\frac{2}{9}} = \frac{\frac{3}{2}}{\frac{56}{9}} = \frac{3}{2} \times \frac{9}{56} = \frac{27}{112} = 112\overline{)27.000} = 0.241 = 0.24$

22 4	
4 60	
4 48	
120	
112	
8	

11) $12{:}48 = \frac{12}{48} = 0.25;\ 0.25 = \frac{25}{100} = 25\%$

12) $2{:}5 = \frac{2}{5} = 0.4;\ 0.4 = 0.40. = 40\%$

13) $0.08{:}0.64 = \frac{0.08}{0.64} = \frac{1}{8} = 0.125;$
$0.125 = 0.12.5 = 12.5\%$

14) $7{:}10 = \frac{7}{10} = \frac{70}{100} = 70\%$

15) $50{:}100 = \frac{50}{100} = 50\%$

16) $45\% = \frac{45}{100} = \frac{9}{20}$

17) $60\% = \frac{60}{100} = \frac{3}{5}$

18) $0.5\% = \frac{0.5}{100} = \frac{5}{1{,}000} = \frac{1}{200}$

19) $1\% = \frac{1}{100}$

20) $66\frac{2}{3}\% = \frac{66\frac{2}{3}}{100} = \frac{\frac{200}{3}}{100} = \frac{200}{3} \div 100 = \frac{\overset{2}{\cancel{200}}}{3} \times \frac{1}{\underset{1}{\cancel{100}}} = \frac{2}{3}$

21) $2.94\% = \frac{2.94}{100} = 2.94 \div 100 = 0.02.94 = 0.0294 = 0.03$

22) $4.5\% = \frac{4.5}{100} = 4.5 \div 100 = 0.04.5 = 0.045 = 0.05$

23) $6.32\% = \frac{6.32}{100} = 6.32 \div 100 = 0.06.32 = 0.0632 = 0.06$

24) $33\% = \frac{33}{100} = 33 \div 100 = 0.\overset{\frown}{33}. = 0.33$

25) $0.9\% = \frac{0.9}{100} = 0.9 \div 100 = 0.\overset{\frown}{00}.9 = 0.009 = 0.01$

26) $16\% = \frac{16}{100} = \frac{4}{25} = 4{:}25$

27) $25\% = \frac{25}{100} = \frac{1}{4} = 1{:}4$

28) $50\% = \frac{50}{100} = \frac{1}{2} = 1{:}2$

29) $45\% = \frac{45}{100} = \frac{9}{20} = 9{:}20$

30) $6\% = \frac{6}{100} = \frac{3}{50} = 3{:}50$

31) Convert to decimals and compare:

$0.9\% = 0.009$

$0.9 = 0.900$ (largest)

$1{:}9 = 0.111$

$1{:}90 = 0.011$

32) Convert to decimals and compare:

$0.05 = 0.05 = 0.050$

$\frac{1}{5} = 0.2 = 0.200$ (largest)

$0.025 = 0.025 = 0.025$

$1{:}25 = 0.04 = 0.040$

↑

Compare this place for the largest number. The first nonzero digit appears in the tenths place.

33) Convert to decimals and compare:

$0.0125\% = 0.000125 = 0.000125$

$0.25\% = 0.0025 = 0.002500$ (largest)

$0.1\% = 0.001 = 0.001000$

$0.02\% = 0.0002 = 0.000200$

↑

Compare this place for the largest number. The first nonzero digit appears in the thousandths place.

34) Convert to decimals and compare:

$\frac{1}{150} = 0.0067$

$\frac{1}{300} = 0.0033$

$0.5 = 0.5000$ (largest)

$\frac{2}{3}\% = 0.0067$

↑

Compare this place for the largest number. The first nonzero digit appears in the tenths place.

35) Convert to decimals and compare:

$1{:}1{,}000 = 0.001 = 0.0010$

$0.0001 = 0.0001 = 0.0001$

$\frac{1}{100} = 0.01 = 0.0100$ (largest)

$0.1\% = 0.001 = 0.0010$

↑

Compare this place for the largest number. The first nonzero digit appears in the hundredths place.

Review Set 8 from pages 71–72

1) 3 **2)** 3.3 **3)** 1.25 **4)** 5.33 **5)** 0.56 **6)** 1.8 **7)** 0.64 **8)** 12.6 **9)** 40 **10)** 0.48 **11)** 1 **12)** 0.96 **13)** 4.5 **14)** 0.94 **15)** 10 **16)** 0.4 **17)** 1.5 **18)** 10 **19)** 20 **20)** 1.8

Solutions—Review Set 8

1)

$\frac{75}{125} \times 5 = X$

$\frac{\overset{3}{\cancel{75}}}{\underset{25}{\cancel{125}}} \times \frac{\overset{1}{\cancel{5}}}{1} = X$

$\frac{\overset{3}{\cancel{75}}}{\underset{1}{\cancel{25}}} \times \frac{1}{1} = X$

$X = 3$

2)

$\frac{\frac{3}{4}}{\frac{1}{2}} \times 2.2 = X$

$\frac{3}{4} \div \frac{1}{2} \times \frac{2.2}{1} = X$

$\frac{3}{\underset{2}{\cancel{4}}} \times \frac{\overset{1}{\cancel{2}}}{1} \times \frac{2.2}{1} = X$

$\frac{6.6}{2} = X$

$X = 3.3$

ANSWERS

3) $\frac{150}{300} \times 2.5 = X$

$\frac{\cancel{150}^{1}}{\cancel{300}_{2}} \times \frac{2.5}{1} = X$

$\frac{2.5}{2} = X$

$X = 125$

4) $\frac{40\%}{60\%} \times 8 = X$

$\frac{\cancel{0.4}^{2}}{\cancel{0.6}_{3}} \times 8 = X$

$\frac{2}{3} \times \frac{8}{1} = X$

$\frac{16}{3} = X$

$X = 5.33\overline{3}$

$X = 5.33$

5) $\frac{0.35}{2.5} \times 4 = X$

$\frac{\cancel{0.35}^{7}}{\cancel{2.5}_{50}} \times 4 = X$

$\frac{7}{50} \times \frac{4}{1} = X$

$\frac{28}{50} = X$

$X = 0.56$

6) $\frac{0.15}{0.1} \times 1.2 = X$

$\frac{\cancel{0.15}^{3}}{\cancel{0.10}_{2}} \times \frac{1.2}{1} = X$

$\frac{3}{2} \times \frac{1.2}{1} = X$

$\frac{3.6}{2} = X$

$X = 1.8$

7) $\frac{0.4}{2.5} \times 4 = X$

$\frac{0.4}{2.5} \times \frac{4}{1} = X$

$\frac{1.6}{2.5} = X$

$\frac{16}{25} = X$

$X = 0.64$

8) $\frac{1{,}200{,}000}{400{,}000} \times 4.2 = X$

$\frac{\cancel{1{,}200{,}000}^{3}}{\cancel{400{,}000}_{1}} \times 4.2 = X$

$\frac{3}{1} \times \frac{4.2}{1} = X$

$\frac{12.6}{1} = X$

$X = 12.6$

9) $\frac{\frac{2}{3}}{\frac{1}{6}} \times 10 = X$

$\frac{2}{3} \div \frac{1}{6} \times \frac{10}{1} = X$

$\frac{2}{\cancel{3}_{1}} \times \frac{\cancel{6}^{2}}{1} \times \frac{10}{1} = X$

$X = 40$

10) $\frac{30}{50} \times 0.8 = X$

$\frac{\cancel{30}^{3}}{\cancel{50}_{5}} \times 0.8 = X$

$\frac{3}{5} \times \frac{0.8}{1} = X$

$\frac{2.4}{5} = X$

$X = 0.48$

11) $\frac{200{,}000}{300{,}000} \times 1.5 = X$

$\frac{\cancel{200{,}000}^{2}}{\cancel{300{,}000}_{3}} \times 1.5 = X$

$\frac{2}{3} \times \frac{1.5}{1} = X$

$\frac{3}{3} = X$

$X = 1$

12) $\frac{0.08}{0.1} \times 1.2 = X$

$\frac{0.08}{0.1} \times \frac{1.2}{1} = X$

$\frac{0.096}{0.1} = X$

$\frac{96}{100} = X$

$X = 0.96$

13) $\frac{7.5}{5} \times 3 = X$

$\frac{\cancel{7.5}^{1.5}}{\cancel{5}_{1}} \times \frac{3}{1} = X$

$X = 4.5$

14) $\frac{250{,}000}{2{,}000{,}000} \times 7.5 = X$

$\frac{\cancel{250{,}000}^{1}}{\cancel{2{,}000{,}000}_{8}} \times 7.5 = X$

$\frac{1}{8} \times \frac{7.5}{1} = X$

$\frac{7.5}{8} = X$

$X = 0.937$

$X = 0.94$

15) $\frac{600}{150} \times 2.5 = X$

$\frac{\cancel{600}^{4}}{\cancel{150}_{1}} \times \frac{2.5}{1} = X$

$X = 10$

16) $\frac{600{,}000}{750{,}000} \times 0.5 = X$

$\frac{\cancel{600{,}000}^{12}}{\cancel{750{,}000}_{15}} \times \frac{0.5}{1} = X$

$\frac{12}{15} \times \frac{0.5}{1} = X$

$\frac{6}{15} = X$

$X = 0.4$

17) $\frac{75\%}{60\%} \times 1.2 = X$

$\frac{0.75}{0.60} \times \frac{1.2}{1} = X$

$\frac{\cancel{75}^{5}}{\cancel{60}_{4}} \times \frac{1.2}{1} = X$

$\frac{5}{4} \times \frac{1.2}{1} = X$

$\frac{6}{4} = X$

$X = 1.5$

18) $\frac{0.25}{0.125} \times 5 = X$

$\frac{0.25}{0.125} \times \frac{5}{1} = X$

$\frac{1.25}{0.125} = X$

$\frac{1250}{125} = X$

$X = 10$

19) $\frac{1{,}000{,}000}{250{,}000} \times 5 = X$

$\frac{\cancel{1{,}000{,}000}^{4}}{\cancel{250{,}000}_{1}} \times \frac{5}{1} = X$

$X = 20$

20) $\frac{\frac{1}{100}}{\frac{1}{150}} \times 1.2 = X$

$\frac{1}{100} \div \frac{1}{150} \times \frac{1.2}{1} = X$

$\frac{1}{\cancel{100}_{2}} \times \frac{\cancel{150}^{3}}{1} \times \frac{1.2}{1} = X$

$\frac{1}{2} \times \frac{3}{1} \times \frac{1.2}{1} = X$

$\frac{3.6}{2} = X$

$X = 1.8$

Review Set 9 from pages 75–76

1) 0.25 **2)** 1 **3)** 0.56 **4)** 1,000 **5)** 0.7 **6)** 8 **7)** 21.43 **8)** 500 **9)** 200 **10)** 10.5 **11)** 3 **12)** 0.63 **13)** 10 **14)** 0.67 **15)** 1.25 **16)** 31.25 **17)** 16.67 **18)** 240 **19)** 0.75 **20)** 2.27 **21)** 1 **22)** 6 **23)** 108 nurses **24)** 72 calories **25)** 81.82 milligrams/hour

Solutions—Review Set 9

1) $\frac{1{,}000}{2} = \frac{125}{X}$

$\frac{1{,}000}{2} \times \frac{125}{X}$

$1{,}000X = 250$

$\frac{1{,}000X}{1{,}000} = \frac{250}{1{,}000}$

$X = 0.25$

2) $\frac{500}{2} = \frac{250}{X}$

$\frac{500}{2} \times \frac{250}{X}$

$500X = 500$

$\frac{500X}{500} = \frac{500}{500}$

$X = 1$

3) $\frac{500}{1} = \frac{280}{X}$

$\frac{500}{1} \times \frac{280}{X}$

$500X = 280$

$\frac{500X}{500} = \frac{280}{500}$

$X = 0.56$

4) $\frac{0.5}{2} \times \frac{250}{X}$

$0.5X = 500$

$\frac{0.5X}{0.5} = \frac{500}{0.5}$

$X = 1{,}000$

5) $\frac{75}{1.5} = \frac{35}{X}$

$\frac{75}{1.5} \times \frac{35}{X}$

$75X = 52.5$

$\frac{75X}{75} = \frac{52.5}{75}$

$X = 0.7$

ANSWERS

6) $\frac{40}{X} \times 12 = 60$

$\frac{40}{X} \times \frac{12}{1} = 60$

$\frac{480}{X} \times \frac{60}{1}$

$60X = 480$

$\frac{60X}{60} = \frac{480}{60}$

$X = 8$

7) $\frac{10}{X} \times 60 = 28$

$\frac{10}{X} \times \frac{60}{1} = 28$

$\frac{600}{X} = \frac{28}{1}$

$\frac{600}{X} \times \frac{28}{1}$

$28X = 600$

$\frac{28X}{28} = \frac{600}{28}$

$X = 21.429$

$X = 21.43$

8) $\frac{2}{2{,}000} \times X = 0.5$

$\frac{2}{2{,}000} \times \frac{X}{1} = \frac{0.5}{1}$

$\frac{2X}{2{,}000} = \frac{0.5}{1}$

$\frac{2X}{2{,}000} \times \frac{0.5}{1}$

$2X = 1{,}000$

$\frac{2X}{2} = \frac{1{,}000}{2}$

$X = 500$

9) $\frac{15}{500} \times X = 6$

$\frac{15X}{500} \times \frac{6}{1}$

$15X = 3{,}000$

$\frac{15X}{15} = \frac{3{,}000}{15}$

$X = 200$

10) $\frac{5}{X} = \frac{10}{21}$

$\frac{5}{X} \times \frac{10}{21}$

$10X = 105$

$\frac{10X}{10} = \frac{105}{10}$

$X = 10.5$

11) $\frac{250}{1} = \frac{750}{X}$

$\frac{250}{1} \times \frac{750}{X}$

$250X = 750$

$\frac{250X}{250} = \frac{750}{250}$

$X = 3$

12) $\frac{80}{5} = \frac{10}{X}$

$\frac{80}{5} \times \frac{10}{X}$

$80X = 50$

$\frac{80X}{80} = \frac{50}{80}$

$X = 0.625$

$X = 0.63$

13) $\frac{5}{20} = \frac{X}{40}$

$\frac{5}{20} \times \frac{X}{40}$

$20X = 200$

$\frac{20X}{20} = \frac{200}{20}$

$X = 10$

14) $\frac{\frac{1}{100}}{1} = \frac{\frac{1}{150}}{X}$

$\frac{\frac{1}{100}}{1} \times \frac{\frac{1}{150}}{X}$

$\frac{1}{100}X = \frac{1}{150}$

$\frac{\frac{1}{100}X}{\frac{1}{100}} = \frac{\frac{1}{150}}{\frac{1}{100}}$

$X = \frac{1}{150} \div \frac{1}{100}$

$X = \frac{1}{\cancel{150}_{3}} \times \frac{\cancel{100}^{2}}{1}$

$X = \frac{2}{3} = 0.666 = 0.67$

15) $\frac{2.2}{X} = \frac{8.8}{5}$

$\frac{2.2}{X} \times \frac{8.8}{5}$

$8.8X = 11$

$\frac{8.8X}{8.8} = \frac{11}{8.8}$

$X = 1.25$

16) $\frac{60}{15} = \frac{125}{X}$

$\frac{60}{15} \times \frac{125}{X}$

$60X = 1{,}875$

$\frac{60X}{60} = \frac{1{,}875}{60}$

$X = 31.25$

17) $\frac{60}{10} = \frac{100}{X}$

$\frac{60}{10} \times \frac{100}{X}$

$60X = 1{,}000$

$\frac{60X}{60} = \frac{1{,}000}{60}$

$X = 16.667$

$X = 16.67$

18) $\frac{80}{X} \times 60 = 20$

$\frac{80}{X} \times \frac{60}{1} = \frac{20}{1}$

$\frac{4{,}800}{X} = \frac{20}{1}$

$\frac{4{,}800}{X} \times \frac{20}{1}$

$20X = 4{,}800$

$\frac{20X}{20} = \frac{4{,}800}{20}$

$X = 240$

19) $\frac{X}{0.5} = \frac{6}{4}$

$\frac{X}{0.5} \times \frac{6}{4}$

$4X = 3$

$\frac{4X}{4} = \frac{3}{4}$

$X = 0.75$

20) $\frac{5}{2.2} = \frac{X}{1}$

$\frac{5}{2.2} \times \frac{X}{1}$

$2.2X = 5$

$\frac{2.2X}{2.2} = \frac{5}{2.2}$

$X = 2.273$

$X = 2.27$

21) $\frac{\frac{1}{4}}{15} = \frac{X}{60}$

$\frac{1}{4} \times \frac{1}{15} = \frac{X}{60}$

$\frac{1}{60} = \frac{X}{60}$

$\frac{1}{60} \times \frac{X}{60}$

$60X = 60$

$\frac{60X}{60} = \frac{60}{60}$

$X = 1$

22) $\frac{25\%}{30\%} = \frac{5}{X}$

$\frac{0.25}{0.3} \times \frac{5}{X}$

$0.25X = 1.5$

$\frac{0.25X}{0.25} = \frac{1.5}{0.25}$

$X = 6$

23) $\frac{45}{100} \times \frac{X}{240}$

$100X = 10{,}800$

$\frac{100X}{100} = \frac{10{,}800}{100}$

$X = 108$

24) $\frac{48 \text{ calories}}{1 \text{ ounce}} = \frac{X \text{ calories}}{1\frac{1}{2} \text{ ounces}}$

$\frac{48}{1} \times \frac{X}{1\frac{1}{2}}$

$X = 48 \times 1\frac{1}{2}$

$X = \frac{48}{1} \times \frac{3}{2}$

$X = \frac{48}{1} \times \frac{3}{2}$

$X = 72$ calories

25) $\frac{450 \text{ milligrams}}{5.5 \text{ hours}} = \frac{X \text{ milligrams}}{1 \text{ hour}}$

$\frac{450}{5.5} \times \frac{X}{1}$

$5.5X = 450$

$\frac{5.5X}{5.5} = \frac{450}{5.5}$

$X = 81.818$

$X = 81.82$ milligrams (per hour)

$$
\begin{array}{r}
81.818 \\
5.5\overline{)450.0.00} \\
\underline{440} \\
100 \\
\underline{55} \\
450 \\
\underline{440} \\
100 \\
\underline{55} \\
450 \\
\underline{440} \\
10
\end{array}
$$