

Module 4: Conversion Calculations and Dosage Calculations

Homework Solutions (Page 1 of 3)

Perform the following conversion calculations using **one** conversion factor.

1) How many seconds are in 17 minutes?

$$\left(\frac{17 \text{ min}}{1}\right)\left(\frac{60 \text{ sec}}{1 \text{ min}}\right) = 1,020 \text{ sec}$$

2) How many feet are in 40 yards?

$$\left(\frac{40 \text{ yd}}{1}\right)\left(\frac{3 \text{ ft}}{1 \text{ yd}}\right) = 120 \text{ ft}$$

3) Convert 10 cm to inches.

$$\left(\frac{10 \text{ cm}}{1}\right)\left(\frac{1 \text{ in.}}{2.54 \text{ cm}}\right) = 3.937 \text{ in.}$$

4) Convert 25 inches to centimeters.

$$\left(\frac{25 \text{ in.}}{1}\right)\left(\frac{2.54 \text{ cm}}{1 \text{ in.}}\right) = 63.5 \text{ cm}$$

5) Convert 2 liters to quarts.

$$\left(\frac{2 \text{ L}}{1}\right)\left(\frac{1.06 \text{ qt}}{1 \text{ L}}\right) = 2.12 \text{ qt}$$

6) Convert 5,000 pounds to tons.

$$\left(\frac{5,000 \text{ lb}}{1}\right)\left(\frac{1 \text{ T}}{2,000 \text{ lb}}\right) = 2.5 \text{ T}$$

7) If one tablet contains 150 mg of ibuprofen, how much ibuprofen is in $3\frac{1}{2}$ tablets?

$$\left(\frac{3.5 \text{ tablets}}{1}\right)\left(\frac{150 \text{ mg}}{1 \text{ tablet}}\right) = 525 \text{ mg ibuprofen}$$

8) Given that 1 kilogram = 2.2 pounds, how many kilograms does a 175 lb adult male weigh?

$$\left(\frac{175 \text{ lb}}{1}\right)\left(\frac{1 \text{ kg}}{2.2 \text{ lb}}\right) = 79.545 \text{ kg}$$

Module 4: Conversion Calculations and Dosage Calculations

Homework Solutions (Page 2 of 3)

Perform the following conversion calculations using **multiple** conversion factors.

9) How many meters are in 1 mile?

$$\left(\frac{1 \text{ mi}}{1}\right)\left(\frac{5,280 \text{ ft}}{1 \text{ mi}}\right)\left(\frac{12 \text{ in.}}{1 \text{ ft}}\right)\left(\frac{2.54 \text{ cm}}{1 \text{ in.}}\right)\left(\frac{1 \text{ m}}{100 \text{ cm}}\right) = 1,609.344 \text{ m}$$

10) How many seconds are in 1 year?

$$\left(\frac{1 \text{ yr}}{1}\right)\left(\frac{365 \text{ days}}{1 \text{ yr}}\right)\left(\frac{24 \text{ hr}}{1 \text{ day}}\right)\left(\frac{60 \text{ min}}{1 \text{ hr}}\right)\left(\frac{60 \text{ sec}}{1 \text{ min}}\right) = 31,536,000 \text{ sec}$$

11) Convert 3 pounds to grams.

$$\left(\frac{3 \text{ lb}}{1}\right)\left(\frac{16 \text{ oz}}{1 \text{ lb}}\right)\left(\frac{28.3 \text{ g}}{1 \text{ oz}}\right) = 1,358.4 \text{ g}$$

12) Convert 2 liters to ounces.

$$\left(\frac{2 \text{ L}}{1}\right)\left(\frac{1 \text{ gal}}{3.79 \text{ L}}\right)\left(\frac{4 \text{ qt}}{1 \text{ gal}}\right)\left(\frac{2 \text{ pt}}{1 \text{ qt}}\right)\left(\frac{2 \text{ cups}}{1 \text{ pt}}\right)\left(\frac{8 \text{ oz}}{1 \text{ cup}}\right) = 67.546 \text{ oz}$$

Module 4: Conversion Calculations and Dosage Calculations

Homework Solutions (Page 3 of 3)

Solve the applied problems.

- 13) The solution strength label of a solution indicates that 100 mL contains 10 grams of magnesium sulfate. How many mL of solution will contain 350 mg of magnesium sulfate?

$$\left(\frac{350 \text{ mg}}{1}\right) \left(\frac{1 \text{ g}}{1,000 \text{ mg}}\right) \left(\frac{100 \text{ mL}}{10 \text{ g}}\right) = 35 \text{ mL}$$

Given
Quantity
 Conversion
Factor
(milligrams to grams)
 Conversion
Factor
(Solution Strength)

- 14) The solution strength label of a solution indicates that 2,000 mL contains 1 gram of epinephrine. How many mL of solution will contain 0.25 mg of epinephrine?

$$\left(\frac{0.25 \text{ mg}}{1}\right) \left(\frac{1 \text{ g}}{1,000 \text{ mg}}\right) \left(\frac{2,000 \text{ mL}}{1 \text{ g}}\right) = 0.5 \text{ mL}$$

Given
Quantity
 Conversion
Factor
(milligrams to grams)
 Conversion
Factor
(Solution Strength)

- 15) Suppose you found that 5 mL of a solution contains 0.25 grams of Amoxicillin. How many mg of Amoxicillin are in 2 tbsp of solution? Assume 1 tbsp = 15 mL.

$$\left(\frac{2 \text{ tbsp}}{1}\right) \left(\frac{15 \text{ mL}}{1 \text{ tbsp}}\right) \left(\frac{0.25 \text{ g}}{5 \text{ mL}}\right) \left(\frac{1,000 \text{ mg}}{1 \text{ g}}\right) = 1,500 \text{ mg}$$

Given
Quantity
 Conversion
Factor
(tbsp to mL)
 Conversion
Factor
(Solution Strength)
 Conversion
Factor
(grams to milligrams)

- 16) Suppose you found that 5 mL of a solution contains 0.1 grams of Motrin[®]. How many mg of Motrin[®] are in 2 tsp of solution? Assume 1 tsp = 5 mL.

$$\left(\frac{2 \text{ tsp}}{1}\right) \left(\frac{5 \text{ mL}}{1 \text{ tsp}}\right) \left(\frac{0.1 \text{ g}}{5 \text{ mL}}\right) \left(\frac{1,000 \text{ mg}}{1 \text{ g}}\right) = 200 \text{ mg}$$

Given
Quantity
 Conversion
Factor
(tsp to mL)
 Conversion
Factor
(Solution Strength)
 Conversion
Factor
(grams to milligrams)