

Dimensional Analysis Practice Problems

Key

Solve for the new unit using dimensional analysis. Make sure you include the new unit in your answer. Answers can be in standard notation or scientific notation. Show your work! Good Luck ☺

1. Convert 0.56kg to mg.

$$0.56 \text{ kg} \times \frac{1,000 \text{ g}}{1 \text{ kg}} \times \frac{1,000 \text{ mg}}{1 \text{ g}} = 560,000 \text{ mg} \text{ or } 5.6 \times 10^5$$

2. Convert 2.0 in to mm. Hint: 1in = 2.54 cm

$$2.0 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1000 \text{ mm}}{1 \text{ m}} = 50.8 \text{ mm}$$

3. Convert 500ft to m.

$$500 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{100 \text{ cm}} = 152.4 \text{ m}$$

4. Convert 3 weeks to minutes.

$$3 \text{ wk} \times \frac{7 \text{ day}}{1 \text{ week}} \times \frac{24 \text{ hours}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hour}} = 30,240 \text{ min}$$

5. How many grams are in a sample that weighs 4.3×10^2 kilograms?

$$4.3 \times 10^2 \text{ kg} \times \frac{1000 \text{ g}}{1 \text{ kg}} = \boxed{4.3 \times 10^5 \text{ g}}$$

6. Convert 30 mL to liters.

$$30 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \boxed{.03 \text{ L}}$$

7. How many centimeters are in 5.1×10^9 megameters?

$$5.1 \times 10^9 \text{ Mm} \times \frac{1,000,000 \text{ m}}{1 \text{ Mm}} \times \frac{100 \text{ cm}}{1 \text{ m}} = \boxed{5.1 \times 10^{17} \text{ cm}}$$

8. Convert 6.1×10^{-4} kilograms into decigrams.

$$6.1 \times 10^{-4} \text{ kg} \times \frac{1000 \text{ g}}{1 \text{ kg}} \times \frac{10 \text{ dg}}{1 \text{ g}} = \boxed{6.1 \text{ dg}}$$

9. The average student is in class 330 minutes a day. Convert that into seconds per week.

$$\frac{330 \text{ min}}{1 \text{ day}} \times \frac{60 \text{ sec}}{1 \text{ min}} \times \frac{7 \text{ day}}{1 \text{ week}} = 138,600 \text{ seconds/week}$$