

Conversion Practice

Name: Key

Period: _____

In physics, we will need to be able to convert between different units of measurement. Here are the most popular conversions you will encounter.

For distance:

10 millimeters = 1 centimeter 100 cm = 1 meter 1000 meters = 1 kilometer

For mass:

1000 grams = 1 kilogram

For time:

60 seconds = 1 minute

60 minutes = 1 hour

Using the conversions above as a guideline, determine how many:

1. Mm in 10 cm

$$10 \text{ cm} \left(\frac{10 \text{ mm}}{1 \text{ cm}} \right) = \boxed{100 \text{ mm}}$$

or

$$\frac{x \text{ mm}}{10 \text{ cm}} = \frac{10 \text{ mm}}{1 \text{ cm}} \quad \boxed{100 \text{ mm}}$$

2. Cm in .5 meter

$$\frac{x \text{ cm}}{.5 \text{ m}} = \frac{1 \text{ m}}{100 \text{ cm}} \quad x = \boxed{50 \text{ cm}}$$

$$.5 \text{ m} \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) = \boxed{50 \text{ cm}}$$

3. Cm in 1.58 meters

$$\frac{x \text{ cm}}{1.58 \text{ m}} = \frac{100 \text{ cm}}{1 \text{ m}} \quad \boxed{x = 158 \text{ cm}}$$

$$1.58 \text{ m} \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) = \boxed{158 \text{ cm}}$$

4. Meters in 2.5 km

$$\frac{x \text{ m}}{2.5 \text{ km}} = \frac{1000 \text{ m}}{1 \text{ km}} \quad \boxed{x = 2500 \text{ m}}$$

5. Meters in 35.7 km

$$35.7 \text{ km} \left(\frac{1000 \text{ m}}{1 \text{ km}} \right) = \boxed{35,700 \text{ m}}$$

6. Meters in 245 cm

$$\frac{x \text{ m}}{245 \text{ cm}} = \frac{1 \text{ m}}{100 \text{ cm}}$$

$$100x = 245$$

$$\boxed{x = 2.45 \text{ m}}$$

7. Grams in 2 kg

$$\frac{2 \text{ kg}}{x \text{ g}} = \frac{1 \text{ kg}}{1000 \text{ g}}$$
$$\boxed{x = 2000 \text{ g}}$$

8. Grams in .5 kg

$$\frac{.5 \text{ kg}}{x \text{ g}} = \frac{1 \text{ kg}}{1000 \text{ g}}$$
$$\boxed{x = 500 \text{ g}}$$

9. Grams in .032 kg

$$.032 \text{ kg} \left(\frac{1000 \text{ g}}{1 \text{ kg}} \right) = \boxed{32 \text{ g}}$$

10. Grams in .002 kg

$$.002 \text{ kg} \left(\frac{1000 \text{ g}}{1 \text{ kg}} \right) = \boxed{2 \text{ g}}$$

11. Seconds in 30 minutes

~~$$\frac{x \text{ s}}{30 \text{ min}} = \frac{60 \text{ s}}{1 \text{ min}}$$~~
$$\boxed{x = 1800 \text{ s}}$$

or

$$30 \text{ min} \left(\frac{60 \text{ s}}{1 \text{ min}} \right) = \boxed{1800 \text{ s}}$$

hour $\rightarrow$ min $\rightarrow$ seconds

12. Seconds in 1 hour

$$1 \text{ hr} \left(\frac{60 \text{ min}}{1 \text{ hr}} \right) \left(\frac{60 \text{ s}}{1 \text{ min}} \right) = \boxed{3600 \text{ s}}$$

13. Grams in 4×10^{-3} kg

$$4 \times 10^{-3} \text{ kg} \left(\frac{1000 \text{ g}}{1 \text{ kg}} \right) = \boxed{4 \text{ g}}$$

14. Grams in 7×10^{-1} kg

$$\frac{7 \times 10^{-1} \text{ kg}}{x \text{ g}} = \frac{1 \text{ kg}}{1000 \text{ g}}$$
$$\boxed{x = 700 \text{ g}}$$

15. Challenge: Mm in 2.3 meters

meters $\rightarrow$ cm $\rightarrow$ mm

$$2.3 \text{ m} \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) \left(\frac{10 \text{ mm}}{1 \text{ cm}} \right) = \boxed{2300 \text{ mm}}$$

16. Challenge: Meters in 306 mm

mm $\rightarrow$ cm $\rightarrow$ meters

$$306 \text{ mm} \left(\frac{1 \text{ cm}}{10 \text{ mm}} \right) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = \boxed{.306 \text{ m}}$$