Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class period: \_\_\_\_

**Unit 2: Dimensional Analysis**

**Test Review Answer Key**

**Directions:** Show all work (known and unknown, and **dimensional analysis method**). Round correct answers to correct number of significant figures.

1. Convert 10 Mm to cm.

$$10 Mm x \frac{10^{6}m}{1 Mm} x \frac{100 cm}{1 m}=1x10^{9} cm $$

1. A bucket of water contains 5.45 L of water. How many mL of water is this?

$$5.45 L x \frac{1000 mL}{1 L} =5450 mL $$

1. A scientist measures out precisely 1.45 mg of a chemical. How many μg is this equal to?

$$1.45 mg x \frac{1 g}{1000 mg} x \frac{1x10^{6} μg}{1 g}=1450 μg $$

1. How many weeks are equal to 2.94 x 106 minutes?

$$2.94x10^{6} min x \frac{1 hr}{60 min} x \frac{1 day}{24 hrs}x \frac{1 week}{7 days}=292 weeks $$

1. How many feet are equal to 25.51 dm?

$$25.51dm x \frac{1 m}{10 dm} x \frac{100 cm}{1 m}x \frac{1 in}{2.54 cm}x \frac{1 ft}{12 in}=8.369 ft$$

1. The highest mountain in North America is Mt. McKinley at 3.848 miles high. How many kilometers is this?

$$3.848 mi x \frac{5280 ft}{1 mi} x \frac{12 in}{1 ft}x \frac{2.54 cm}{1 in}x \frac{1 m}{100 cm}x \frac{1 km}{1000 m}=6.193 km$$

1. How many tons are equal to 6.87 x 109 mg? (1 oz = 28.34 g, 1 ton = 2000 lb)

$$6.87x10^{9} mg x \frac{1 g}{1000 mg} x \frac{1 oz}{28.34 g}x \frac{1 lb}{16 oz}x \frac{1 ton}{2000 lbs}=7.58 tons $$

1. A car has a gasoline tank with a capacity of 18.0 gallons. How many liters is this equal to? (1 L = 2.1134 pints, 1 gallon = 4 quarts, 1 quart = 2 pints)

$$18.0 gal x \frac{4 qts}{1 gal} x \frac{2 pints}{1 qt}x \frac{1 L}{2.1134 pints}=68.1 L $$

1. How many years are equal to 1,345,000 seconds?

$$1,345,000 sec x \frac{1 min}{60 sec} x \frac{1 hr}{60 min} x \frac{1 day}{24 hrs}x \frac{1 year}{365 days}=0.04265 years $$

1. A leaky roof drips at the rate of 0.48 L/hr when it rains. What is this rate in mL/min? **\*TRY IT!\***

$$ \frac{0.48 L}{1 hour} x \frac{1000 mL}{1 L}x \frac{1 hr}{60 min}=8.0 mL/min $$