**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**M8-U6: Notes #8 – Applications of Scientific Notation Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Warm-Up:**

 If you could walk at a rate of 2 meters per second it would take you  seconds to walk to the moon. Is it more appropriate to report this time as  seconds or 6.09 years? *Explain.*

 In an ocean the sea floor moved 475 kilometers over 65 million years. Is it more appropriate to report this rate as  kilometer per year or 7.31 centimeters per year? *Explain.*

When measuring “things” they have several properties like **length**, **mass**, and **volume**.

**Length** = the distance from point A to point B. (measured in **meters**)

**Mass** = How much gravity is pulling down on a thing…weight (sort of). (measured in **grams**)

**Volume** = How much of a thing there is. How much space is it taking up? (measured in **liters**)

**Conversion Chart**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Prefix** | **Kilo** | **Hecto** | **Deca** | **base****(m, g, L)** | **deci** | **centi** | **milli** |
| **Symbol** | k | h | D |  | d | cm | mm |
|  |  |  |  |  |  |  |  |
| **Standard Form** | 1,000 | 100 | 10 | 1 | 0.1 | 0.01 | 0.001 |
| **Term** | Thousand | Hundred | Ten | One | Tenth | Hundredth | Thousandth |
| **Silly Saying** |  |  |  |  |  |  |  |

**Prefix Form**

**Example 1:** Write each of the following using the appropriate unit in prefix form.

**a)**  meters **b)**  Liters **c)**  grams

**Example 2:** Write each of the following using the appropriate unit in prefix form.

**a)** 0.070 grams **b)** 4200 volts **c)** 0.0085 Liters

**Example 3: Application Questions**

Using the table below, answer the following questions:

|  |  |  |
| --- | --- | --- |
| **Planet** | **Average distance from Sun in meters** | **Average distance from the Sun in kilometers** |
| Mercury |  m |  |
| Earth |  |  km |
| Saturn |  m |  |

1. How close to Earth does Mercury come when both planets are at an average distance from the Sun? Answer using most appropriate units.
2. How close does Saturn come to Mercury when both are at an average distance from the Sun? Answer using most appropriate units.
3. How close does Saturn come to Earth when both planets are at an average distance from the Sun? Answer using most appropriate units.

Is the distance that you found in (c) greater or less than the average distance from Earth to the Sun? *Explain.*

**Example 4:** An ant has a mass of approximately  grams and an elephant has a mass of approximately 8 metric tons.

 *Note: 1 kg = 1000 grams, 1 metric ton = 1000 kg, 1m = 100 cm, 1km = 1000 m*

**a.** How many ants does it take to have the same mass as an elephant?

**b.** An ant is  cm long. If you put all these ants from your answer to part (a) in a line (front to back), how long would the line be?