

## Even Even More Problems for Dimensional Analysis

Geology 1P

Mr. Traeger

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_

Work the following problems using dimensional analysis/factor label method. **You absolutely must show your work!** Use the conversion table given below and also the metric conversion table given to you in the assignment %Metric System: Friend of the Scientist.+The answers are given. **Show how we get these answers using the factor label method and express your answer in scientific notation.**

Helpful Conversion Factors	
1 inch (in.)	2.54 centimeters (cm)
1 mile (mi.)	1.6 kilometers (km)
1 liter (l)	0.264 gallons (g)
1 fluid ounce (oz.)	29.57 milliliters (mL)
1 pound (lb.)	0.45 kilograms (kg)
1 gallon (g)	3.79 Liters (L)
1 short ton (2,000 lbs.)	907.2 kilograms (kg)
1 meter (m)	3.28 feet (ft.)
1 mile (mi.)	5,280 feet (ft.)
60 seconds (sec.)	1 minute (min.)
60 minutes (min.)	1 hour (hr.)
24 hours (hr.)	1 day
365.25 days	1 year

1. The world's oceans and seas hold a combined  $3.6 \times 10^{22}$  gallons of water. How many **kiloliters (kL)** of water is this? Correct answer is  $1.4 \times 10^{20}$  **kL**. There are too many zeroes to put in standard notation!
  
2. The radius of planet Earth is 6,378 kilometers. How far would we have to dig in **feet** if we wanted to get to the center of the Earth? Correct answer is 21,047,400 **feet** or  $2.1 \times 10^7$  **feet**.
  
3. The mass of Earth is  $5.97 \times 10^{24}$  kilograms (kg). What is this in **pounds**? Correct answer is  $1.33 \times 10^{25}$  **pounds**. There are too many zeroes to put in standard notation!
  
4. If there are approximately 150 million ( $1.5 \times 10^8$ ) kilometers in one Astronomical Unit (AU), then how far away is the planet Mercury from the Sun in **miles** if Mercury is 0.39 Astronomical Units from the Sun? Express your answer in **miles**. Correct answer is 36,562,500 **miles** or  $3.7 \times 10^7$  **miles**.