TH-GP General Physics Week 4 10/5

1.) Density: $14.0\ g/cm^3$ (3 sf)

Mass: $24.0\ g$ (3 sf)

Volume: ?

$\frac{g}{cm^3} = \frac{mass}{volume}$

Density = $\frac{mass}{volume}$

$D = \frac{M}{V}$

$F = 14.0\ kg\ m/s^2$

F = (mass)(acceleration)

$V = \frac{M}{D} = \frac{24.0\ g}{14.0\ g/cm^3}$ (3 sf)

$V = 1.71\ cm^3$

2.) Mass: $18.6\ g$ (3 sf)

Volume: $38.2\ cm^3$

Density: ?

$D = \frac{M}{V} = \frac{18.6\ g}{38.2\ cm^3}$

$= 0.4869$

$0.487\ g/cm^3$

3.) Volume: $12.4\ cm^3$

Density: $2.60\ g/cm^3$

Mass: ?

$V(D) = \left(\frac{M}{V}\right)V$

$M = (V)(D) = (12.4\ cm^3)(2.60\ g/cm^3)$

$32.2\ g$

1.) 380000.

$3.8 * 10^5$

2.) 0.00058

$5.8 * 10^{-4}$

3.) 706000000

$7.06 * 10^8$

4.) 0.00000732

$7.32 * 10^{-6}$

5.) 891000.

$8.91 * 10^5$

6.) 0.00000901

$9.01 * 10^{-6}$

Find the number of significant digits

1.) 5.004 m (4)

2.) 0.0047 m (2)

3.) 6000 km (1)

4.) 200. cm (3)

5.) 4009 (4)

6.) 0.002230 m (4)

7.) 9 planets (∞)

8.) 400.03 km (5)

200 (3)

200 (2)

9.) 5.000 cm (4)

Cu Copper

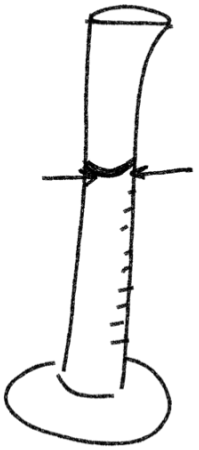
Density ρ

$cm^3 = mL$ g/cm^3

g/mL

$\rho = 4.506$

mass = 4.51



Density

Chromium	7.19 g/mL	Tungsten	19.25 g/mL
cobalt	8.9 g/mL	Molybdenum	10.2 g/mL
carbon	1.82 g/mL	Copper	8.96 g/mL
Niobium	8.67 g/mL	Zinc	7.14 g/mL
Vanadium	6.0 g/mL	Aluminum	2.7 g/mL
Titanium	4.506 g/mL	Iron	7.86 g/mL
Antimony	6.697 g/mL	Bismouth	9.8 g/mL

General Physics

Chapter 1: Physics and Measurement

1.4 Dimensional Analysis

1.) What is dimensional analysis? What is it reliant on?

2.) Why can you multiply a number by a series of fractions and not change the value of the original number?

3.) Prove the product of time (measured in *s*) and velocity (measured in *m/s*) is a distance (measured in *m*).

1.5 Conversion of Units

4.) Write the following unit conversions:

a) 1 mile = _____ ft

b) 1 in = _____ cm

c) 1 mile = _____ km

5.) Use unit conversions and dimensional analysis to prove the mile to kilometer equivalent.

1.6 Estimates & Orders of Magnitude Calculations

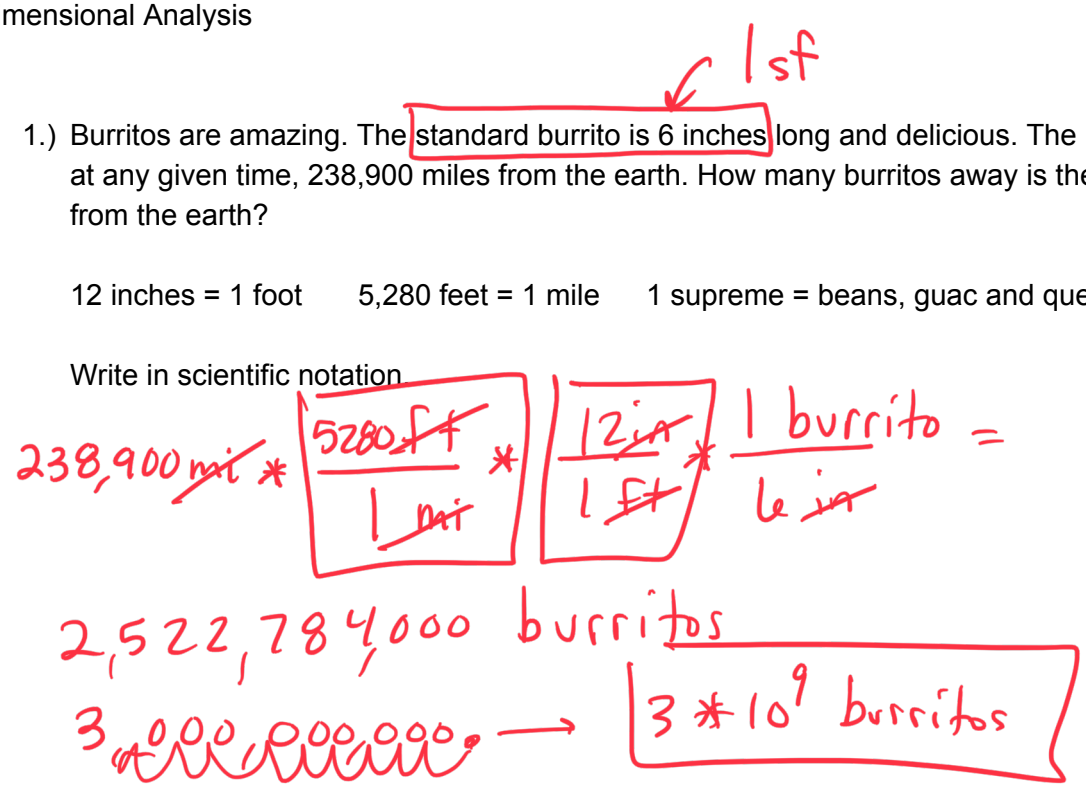
6.) Write each of the following in scientific notation:
   a) 2067000000
   b) 0.000642
   c) 205×380000

Dimensional Analysis

1.) Burritos are amazing. The standard burrito is 6 inches long and delicious. The moon is, at any given time, 238,900 miles from the earth. How many burritos away is the moon from the earth?

12 inches = 1 foot 5,280 feet = 1 mile 1 supreme = beans, guac and queso

Write in scientific notation.



2.) Craters be thirsty. A Big Gulp soft drink at 7-11 is 30 ounces. The Grand Canyon is big. Seriously. It has a volume of 5,450,000,000,000 cubic yards.

1 ounce = 1.805 cubic feet 1 cubic yard = 27 cubic feet

Write in scientific notation.

3.) Mo' money, mo (weight) problem. Money is awesome. And money in bin form… as in Scrooge McDuck's money bin… is beyond awesome. (Note: watching an episode of DuckTales is a homework assignment if you have never watched it)

A penny weighs 2.5 grams. Jeff Bezos, owner and founder of Amazon, has a net worth of $145,400,000,000. What would be the weight, in pounds, of Jeff Bezos's fortune if he liquidated all of his assets and exchanged it for pennies?

1 pound = 454 grams

Write in scientific notation.

$145,400,000,000 * 100 pennies / $1 * 2.5 g / 1 penny * 1 lb / 454 g

80,000,000,000 lbs

$8.0 * 10^{10}$ lbs

4.) Tim Janus is a great man. He holds the world record for longest belch at 18.1 seconds. Think about that for a second. Imagine it....

Anyway… How many world record Tim Janus belches are there in one year?

1 min = 60 sec 60 min = 1 hr 24 hr = 1 day 365 days = 1 yr

Write in scientific notation.