Name: _____   Period: _____

"CONVERSIONS A"

Directions: Complete each problem. You may use your Conversions Sheet. Be sure to show all work as shown in class. Partial credit may be earned for work shown. For some problems accuracy may be noted in terms of how far you go past the decimal place)
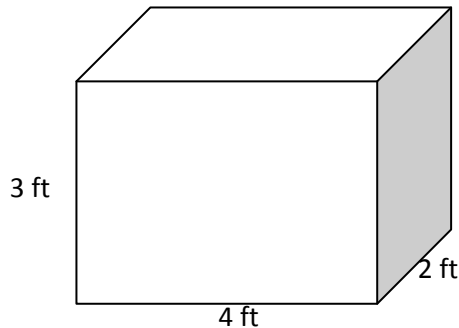
MASS   1. An object is <u>210 lbs</u>, what is its <u>mass in Kilograms</u>? (Answer: 1 Decimal Place)

210 lbs x 0.45 = 94.5 Kg

VOLUME   2. Using the diagram provided, determine the <u>volume in cubic feet</u> of the aquarium?

3 ft x 4 ft x 2 ft = 24 ft^3

3 ft

2 ft

4 ft

VOLUME   3. Using the answer from the question above, <u>how many gallons</u> could the aquarium hold?
(HINT: there are 7.48 ft^3 in 1 gallon)   (Answer: 1 Decimal Place)

24 ft^3 x 7.48 ft^3/gal = 179.5 Gallons

DENSITY   4. The formula for density = mass (in grams) / volume (cm^3). An object has a mass of <u>2 kilograms</u> and a volume of <u>4,000 cm^3</u>.

A.   What is the <u>mass of the object in grams</u>?
2 Kg x 1000 g/Kg = 2000 grams

B.   What is the <u>density of the object</u>? (Record answer out 1 decimal place)
D = M/V   2000 grams/4000 cm^3 ➔ 0.5 g/cm^3

C. Will the object <u>float or sink</u>? (Explain your answer)

It will float since it's density is 0.5 g/cm^3, which is less than 1.0 g/cm^3.

AREA   5. A desk is <u>61 cm</u> wide by <u>46 cm</u> long. What is the surface area of the desk? (Record in cm^2)

61 cm x 46 cm = 2806 cm^2

WEIGHT 6. An object has a weight of 200 N on Earth. What is the Weight of the object on the Moon?
(Remember, that gravity on the moon is 1/6 that of Earth) (Record answer out 1 decimal place)

　　　　200 N (ON EARTH) x 1/6 = 33.3 N

WEIGHT 7. An object is 5 Kg on Earth. (Weight = Mass x Acceleration) Remember, that Mass must be in Kg, and Acceleration of Gravity on Earth is 9.8 m/s^2.

　　　　A.　What is the Weight of the object on Earth?

　　　　W = M * A　W = 5 Kg * 9.8 m/s^2 ➔ 49 Kg*m/s^2 ➔ 49 N

　　　　B.　What is the Weight of the object on Jupiter? (To calculate Weight on another planet, you must first find the Weight in Newtons on Earth, then multiply by the other planets relative gravity) (Record Answer out 1 decimal place)

　　　　49 N * Relative Gravity Jupiter (2.54) ➔ 124.46 N ➔ 124.5N

LENGTH 8. You run a 50 meter dash. How many feet did you run?

　　　　50 m x 3.28 = 164

MASS 9. An object has a mass of 554 Kg on Earth. What is the mass of the object on the moon?

　　　　554 Kg, mass never changes.

VOLUME 10. You have a beaker of water, a rock, and 200 mL of water. You place the 200 mL of water in the beaker. You then place the rock in the water. The water level goes from 200 mL to 227 mL.

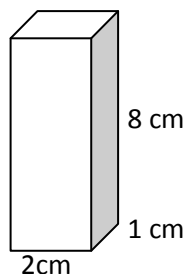　　　　A.　What is the volume of the water displaced by the rock in mL?

　　　　227-200 = 27 mL

　　　　B.　What is the volume of the rock in cm^3?

　　　　27 mL = 27 cm^3

DENSITY 11. An object is 25 grams and it's measurements are shown below.

　　　　A.　What is the mass of the object?

　　　　25 grams

8 cm

　　　　B.　What is the volume of the object?

　　　　2 cm x 1 cm x 8 cm ➔ 16 cm^3

1 cm

2cm

　　　　C.　What is the density of the object? (Record Answer 2 Decimal Places)

　　　　D = M/V ➔ 25 g/16 cm^3 ➔1.6 g/cm^3

AREA

12. A classroom measures <u>30 feet</u> long and <u>20 feet</u> wide.

    A. Floor tiles measure 1 ft^2. <u>How many floor tiles</u> are needed to redo the floor?

    20 ft x 30 ft = 600 ft^2 Therefore, you need 600 tiles.

    B. The floor tiles you like come <u>22 in a box</u>, how many boxes must you buy? *NOTE: you can't buy a partial box, and must tile the entire floor.*

    600/22 = 27.27 ➔ 28 boxes

    C. How many m^2 is the floor?

    600 ft^2 x 0.09 =54 m^2

LENGTH

13. A mile is 5,280 feet. *Remember: 10 mm = 1 cm, 100 cm = 1 m, 1 km = 1000 m*
    A. How many meters is that? (Use 0.30 meters = 1 foot)
    5280 ft x 0.30 = 1584 meters

    B. How many centimeters is that? (use previous answer to do this problem)
    1584 meters * 100 cm/1 m = 158,400 cm

    C. How many millimeters is that? (use previous answer to do this problem)
    158,400 cm * 10 mm/1 cm = 1,584,000 mm

MASS

14. The cost of gold is <u>$1273.88 per ounce</u> (as of 9/21/10). Your grandmother left you <u>172 grams</u> of gold coins and you want to purchase your first car. The car you want is <u>$4500</u>.
    A. How many ounces of gold do you have to sell? (Gold is expensive, go out as many decimal places as you can, you don't want to be ripped off during the exchange)
    172 grams * 0.035 = 6.02 ounces

    B. If you sell the gold, how much money can you get? (Go to the nearest cent)
    6.02 ounces * $1273.88/ounce = $7668.76

    C. Do you have enough to buy the car? If not, how much are you short. If you have extra, how much extra.
    Yes, I have $3168.76

DENSITY

15. The density of fresh water is 1.0 g/cm3. Anything < 1.0 will float. Anything > 1.0 will sink. If you build a boat and it has a mass of 2,500 Kg and a volume of 4,000,000 $cm^{3.}$

    A. What is the <u>mass in grams</u>? (Remember, there are 1000 grams in 1 kilogram)
    2,500 x 1000 = 2,500,000 grams

    B. What is the Density?
    D = M/V ➔ 2,500,000 grams/4,000,000 cm^3 ➔ 0.625 g/cm^3
    C. Will it sink or float?
    SINK