Chemistry Module 1 Homework

Assignment #1: **Read pages 1 – 16.**

1. What is matter?
2. Which of the following are examples of matter? Concrete, electricity, water vapor, heat, air
3. List the basic metric units to measure:
   a. Length
   b. Mass
   c. Time
   d. Volume
4. List the basic English units (non-metric) to measure:
   a. Length
   b. Mass
   c. Time
   d. Volume
5. What does each prefix mean?
   a. milli
   b. centi
   c. kilo
6. Which has more mass: a 0.8 kg brick or a 752 mg rock?

7. Which is heavier: 1 kg of lead or 1 kg of feathers?

8. Match the appropriate volume with each item: Write the object name and matching letter.

An orange	a. 30 m^3
A basketball	b. 200 cm^3
A van	c. 2 L
A vitamin pill	d. 200 mm^3

9. Match the appropriate mass with each item: Write the object name and matching letter.

A peanut	a. 400 g
A pear	b. 50 mg
A stamp	c. 60 kg
A person	d. 1.5 g

10. The mass of a person on earth is 102 kg. What would be the mass of the same person on the moon where the gravity is 1/6 that of earth?

11. Convert. Use the factor-label method. Show your work.
    a. 95.4 mg into grams
    b. 11.5 kL into liters
    c. 0.038 km into cm
    d. 23.7 mL into liters

12. Convert. Use the factor-label method. Show your work.
    a. 1872 cm into inches
    b. 6.5 gallons into liters
    c. 21.3 feet into centimeters

13. A fish tank is measured to be 70.0 cm by 50.0 cm by 30.0 cm. What is its volume: Show work.
    a. in cubic centimeters?
    b. in liters?

14. A flu shot dose consists of 3.2 cc of medicine. How many liters is that? Show work.

15. Honors - A plastic storage container is measured to be 0.8 m by 1.4 m by 2.2 m. What is its volume in liters?

16. Honors – A cheetah has been clocked at 112 km/hr over a 100.0-m distance. What is its speed in m/s? Use the factor-label method. Show work.

17. Honors – Light travels at a speed of 2.9979×10^{12} cm/sec. What is the speed of light in km/hr? Use the factor-label method. Show work.

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Assignment #2: **Read pages 17 – 31.**

18. Convert the following numbers to scientific notation:
    a. 409.56
    b. 5,003,000
    c. 0.0085
    d. 0.314

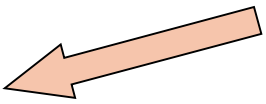
19. Convert the following numbers to decimal:
    a. 7.21×10^{3}
    b. 3.901×10^{-4}
    c. 8.3×10^{5}
    d. 2.090×10^{-4}

20. Explain the difference between accuracy and precision.

21. How many significant figures are in the following numbers?
    a. 34.10
    b. 0.0018
    c. 209.400
    d. 0.023090
    e. 6.2×10^{4}
    f. 2.040×10^{7}

22. Perform the calculations and round your answers to the correct number of significant figures. For addition and subtraction, your answer must match the least precise value.
    a. 8.452 g + 14.23 g + 15 g =
    b. 580.2 L – 267.834 L =

23. Perform the calculations and round your answers to the correct number of significant figures. For multiplication and division, your answer must match the value with the fewest sig figs.
    a. 3.42 cm x 2.6 cm =
    b. 48.742 kg ÷ 0.214kg =



ALWAYS show calculations for math problems.

24. Why does a cork float on water?

25. Lead has a density of 11.42 grams per mL and gold has a density of 19.32 grams per cc. If you made two identical statues, one out of lead and one out of gold, which statue would be heavier?

26. Silver has a density of 10.49 g/cm^3. If you make a statue out of 850.0 cm^3 of silver, what is the statue's mass?

27. Gold has a density of 19.32 grams per mL. If a gold platter has a mass of 425 g, what is its volume?

28. Would the density of a person be the same on the surface of the earth and on the surface of the moon where there is less gravity?

29. A tuber has a mass of 107.6 kg and a volume of 0.095 m^3. The water in the Comal River has a density of 1005 kg/m^3. Will the tuber float or sink when he falls out of his tube at the Tube Chute?

30. Honors – The mass of a cube of iron is 950.0 g. What is the mass of a cube of lead that has the same dimensions? (Density of iron = 7.87 g/cm^3, density of lead = 11.4 g/cm^3)

31. Honors – A plastic ball with a volume of 39.2 cm^3 has a mass of 28.56 g.

    a. Would the ball sink or float in water?

    b. Would this ball sink or float in a container of gasoline? (Density of gasoline = 0.67 g/cm^3).

32. Honors – How large a container, in liters, would you need to hold 12.5 kg of gasoline? (Density of gasoline = 0.67 g/cm^3)