

EXPERIMENT 2**Chemistry 110 Lab****DIMENSIONAL ANALYSIS
PROBLEMS**

Date _____

Name _____

Lab Section _____

Initials _____

Solve the following problems, expressing each answer with:

- 1 the correct number of significant figures
- 2 in correct scientific notation
- 3 with the correct units

You must have the correct number of significant figures in the final answer for problems 1-7 or you will receive no credit.

1. $40.0 \text{ ft} \times 3.0 \text{ lbs} =$

Answer _____

2. $\frac{32.00 \text{ miles}}{0.0035 \text{ hr}} =$

Answer _____

3. $76.94 \text{ in} + 75.4 \text{ ft} =$

Answer _____

4. $(3.6 \times 10^6 \text{ m}^2)^{1/2} =$

Answer _____

5. $4.6 \times 10^1 \mu\text{L} + 2.975 \times 10^1 \mu\text{L} + 9.34 \times 10^{-1} \mu\text{L} =$

Answer _____

Remember: You must have the correct number of significant figures in your answers

$$6. \frac{5.9 \times 10^4 + 9.7 \times 10^4}{0.00976 \text{ sec} - 0.00971 \text{ sec}} =$$

Answer _____

$$7. \frac{6.40 \times 10^{-350} \text{ sec}}{(4 \times 10^8 \text{ sec})^3} =$$

Answer _____

Remember: Your answer must be in scientific notation with the correct number of significant figures

8. Convert:

conversion factor(s)



$$2.2 \text{ cm} = \text{_____ mm}$$

$$4.2 \text{ }\mu\text{L} = \text{_____ L}$$

$$5.99 \text{ kg} = \text{_____ dg}$$

$$111 \text{ cm}^3 = \text{_____ L}$$

$$8 \text{ m}^2 = \text{_____ Km}^2$$

$$33 \text{ cm}^2 = \text{_____ nm}^2$$

$$8.5 \times 10^3 \text{ mm}^2 = \text{_____ dm}^2$$

9. What is the density of copper if a 23.6 cm^3 sample had a mass of 210.4 g

Calc.

Answer _____

10. Gold has a density of 17.0 g/cc . A nugget weighing 0.678 kg was found. What is the volume, in cubic centimeters, of this nugget?

Calc.

Answer _____

11. Calculate the density of water in g/cm^3 if 437.5 pounds of water has a volume of 7.0 cubic feet.

Calc.

Answer _____

12. Nitric acid, HNO_3 , has a density of 1.4337 g/mL . What is the mass in grams of $500.0 \text{ }\mu\text{L}$ of this solution?

Answer _____

13. A sprinter runs the one hundred yard dash in 9.95 seconds. What was the runner's speed in kilometers per hour?

Answer _____

14. A certain very large diamond is 38 carats.



What is the mass in pounds of the diamond? 1.000

carat = 2.000×10^2 mg

Answer _____

NOTE: YOU MUST BRING SAFETY GOGGLES NEXT WEEK TO LAB

Complete the following problems at home:

Show correct units, sig. figs., all work, and answer in scientific notation.

1. A car is going 80.25 miles per hour on the freeway. What is the speed of the car in meters per second?

Answer _____

2. Water has a density of .989 g/ml. What is the volume, in gallons, of 11 ton of water?

Answer _____

3. What is the mass, in g, of a rock (density 2.67 g/cm^3) that has a length of .25 in., width of .0031 m and the height is .051 cm

Answer _____

All 4 pages of this lab are to be turned in next week.