South Pasadena • AP Chemistry

Name_____

Period _____ Date ___/___/___

1•Matter and Measurement

MATH PRETEST

1. What volume of a liquid having a density of 1.48 g/cm^3 is needed to supply 5.00 grams of the liquid?
   a) 0.296 cm^3 d) 3.38 cm^3
   b) 1.48 cm^3 e) 7.40 cm^3
   c) 2.26 cm^3

2. The density of aluminum is 2.70 g/cm^3. If a cube of aluminum weighs 13.5 grams, what is the length of the edge of the cube?
   a) 5.00 cm d) 0.312 cm
   b) 1.71 cm e) 0.200 cm
   c) 1.25 cm

3. The number of significant figures in 0.06060 x 10^{-5} is
   a) 2 d) 5
   b) 3 e) 6
   c) 4

4. The number, three hundred fifty thousand, written in scientific notation is best written as
   a) 350 d) 3.50 x 10^5
   b) 3.5 x 10^6 e) 3.50 x 10^{-5}
   c) 3.5 x 10^5

5. The mass of a sample weighed on an electronic balance that is sensitive to ±0.3 mg is 1.2300 g. The number of significant figures in this measurement is
   a) 1 d) 4
   b) 2 e) 5
   c) 3

6. What is the numerical value of:
   1.5 cm – 7.222 x 10^{-1} cm?
   a) 0.7778 cm d) 0.8 cm
   b) 0.778 cm e) 7.072 x 10^{-1} cm
   c) 0.78 cm

7. Four samples were weighed using three different balances. (All are as accurate as the precision below indicates.) The masses are 0.94 kg, 58.2 g, 1.55 g, and 250 mg. This total mass should be reported as
   a) 1000.000 g d) 1.00 x 10^3 g
   b) 1000.0 g e) 1.0 x 10^3 g
   c) 1.000 x 10^3 g

8. To convert a value in kilograms to centigrams one should
   a) multiply by 10^5 d) divide by 10^5
   b) multiply by 10^3 e) divide by 10^{-1}
   c) multiply by 10^{-3}

9. How many cm^2 are in an area of 4.21 in^2?
   a) 10.7 cm^2 d) 1.66 cm^2
   b) 114 cm^2 e) 1.14 cm^2
   c) 27.2 cm^2

10. When the prefix micro (μ) is used in the metric system, a fundamental unit of measurement is multiplied by a factor of
   a) 10^{-9} d) 10^3
   b) 10^{-6} e) 10^9
   c) 10^{-3}

11. Of the masses 86.30 g, 0.0863 kg and 8.630 x 10^5 mg, which (if any) is the largest?

Show work for #1

a) 86.30
b) 0.0863 kg
c) 8.630 x 10^5 mg
d) they are the same
e) two are the same, one is smaller

12. Consider a brass alloy that contains 66% copper and 34% zinc. How many grams of zinc are present in 125 kg of the alloy?

a) 2.4 g
b) 42 g
c) 83 g
d) 2.4 x 10^4 g
e) 4.2 x 10^4 g

Show work for #9

13. The density of a sodium sulfate solution is 1.07 g/cm^3. The solution is 8.00% sodium sulfate by mass. How many cm^3 of the solution are needed to supply 4.28 g of sodium sulfate?

a) 30.0 cm^3
b) 35.0 cm^3
c) 40.0 cm^3
d) 45.0 cm^3
e) 50.0 cm^3

14. The percentage water in an unknown hydrate was determined by heating the sample and driving the water off the sample. Two independent measurements gave values of 19.564 and 21.731%. Its percentage should be reported as

Show work for #13

a) 20.6475%
b) 20.648%
c) 20.65%
d) 20.6%
e) 21%

Answers: ***(Please use CAPITAL letters)***

1.		6.		11.	
2.		7.		12.	
3.		8.		13.	
4.		9.		14.	
5.		10.			