Big Chem: Unit 2 Measuring & Calculating

PRINT Name _____ Period _____

For research, go to The On-Line Reference Text Unit 2. **Measuring & Calculating**

1. How many significant digits are there in each of the following?

a. 903.2, b. 90.3, c. 900.04, d. 0.0090, e. 0.0900, f. 99, g. 0.0088, h. 0.049, i. 0.02, j. 70.

Ans: a =4, b =3, c =5, d =2, e =3, f =2, g =2, h =2, i =1, j= 2.

2.

Perform the following operations.

a. $(6.09 \times 10^{-1})(9.08 \times 10^{5})$

b. $(1.65 \times 10^{1})(5.24 \times 10^{2})$

c. $(1.10 \times 10^{9})(4.75 \times 10^{9})$

d. $(1.18 \times 10^{-2})(2.20 \times 10^{3})$

e. $\dfrac{(8.17 \times 10^{1})(8.70 \times 10^{5})}{4.20 \times 10^{5}}$

f. $\dfrac{(4.87 \times 10^{6})(9.69 \times 10^{1})}{2.84 \times 10^{6}}$

g. $\dfrac{(7.79 \times 10^{4})(6.45 \times 10^{4})}{(5.44 \times 10^{6})(7.45 \times 10^{-1})}$

h. $\dfrac{(7.69 \times 10^{2})(6.56 \times 10^{6})}{(2.92 \times 10^{4})(1.65 \times 10^{4})}$

i. $\dfrac{(9.19 \times 10^{7})(1.79 \times 10^{1})}{(8.17 \times 10^{4})(8.32 \times 10^{7})}$

j. $\dfrac{(6.40 \times 10^{2})(9.97 \times 10^{4})}{(6.12 \times 10^{-2})(9.71 \times 10^{4})}$

Ans: a = 5.53 X10⁵, b = 8.65 X 10³, c = 5.23 X 10¹⁸, d = 2.60 X 10¹,
g = 1.24 X 10³, h = 1.05 X 10¹

METHOD MUST BE SHOWN FOR ALL PROBLEMS!-

3. What is the density of a piece of cement which has a mass of 8.76 g and a volume of 3.07 cm³? Ans: 2.85 g/cm³

4. What is the density of a piece of cork which has a mass of 0.650 g and a volume of 2.71 cm^3? Ans: 0.240 g/cm^3.

5. Limestone has a density of 2.72 g/cm^3. What is the mass of 981 cm^3 of limestone? Ans: 2670 g.

Solve the following problems for mass:

6. Ammonium magnesium chromate has a density of 1.84 g/cm^3. What is the mass of 6.96 cm^3 of this substance? Ans: 12.8 g.

7. Barium perchlorate has a density of 2.74 g/cm^3. What is the mass of 610 cm^3 of this substance? Ans: 1670 g.

Solve the following problems for volume:

8. Cerium sulfate has a density of 3.17 g/cm^3. What is the volume of 706 g of this substance? Ans: 223 cm^3.

ALL EXPLANATIONS MUST BE IN COMPLETE SENTENCES!!

9. Why is mass used instead of weight for scientific work?

10. Why is it important to maintain the correct number of significant digits in calculations?

11. List the number of significant digits for each of the following:

a. 1.x10^8, b. 6.8 x 10^8, c. 4.930 00 x 10^9, d. 8.420 000 0 x 10^8

   Ans: a =1, b =2, c =d, d =8

12. Express in scientific notation:

a. 36.8, b. 0.0387, c 0.000 216 5, d. 516 830 000 000

   Ans: a = 3.6 X 10^1, b = 3.87 X 10^{-2}, c = 2.165 X 10^{-4}, d = 5.16 X 10^{11}

STAPLE THIS PAPER TO YOUR PAPERS (at home).

Turn in at the Beginning of the Period when due.