

## The Need for a Foundation: Matter and Measurement Ch. 1

### I. A Word About the Class...

- A. We will be covering last year's material at a blistering pace
- B. All students will be expected to know last year's material and some (not all) will be covered briefly in class.
- C. Shorten notes whenever possible.
- D. If you need help, ASK SOMEONE!
- E. Estimating skills will become very important!
- F. Refer to Chapter 1 worksheet

### II. Scientific Notation

- A. Makes numbers more manageable
- B. Consists of \_\_\_\_\_ and \_\_\_\_\_.
  - 1. If number \_\_\_\_\_, exponent \_\_\_\_\_.
  - 2. If number \_\_\_\_\_, exponent \_\_\_\_\_.
- C. In AP chem, it is useful to manipulate numbers to make them more manageable.
  - 1. Ex.  $1.0 \times 10^{-4} / 4.0 \times 10^{-5}$
  - 2. Ex.  $3.0 \times 10^{-9} / 6.0 \times 10^{-8}$

### III. Sig Fig Rule of Thumb

- A. When in doubt, give \_\_\_\_\_!!!
- B. AP has a \_\_\_\_\_ sig fig grading policy and you can only lose \_\_\_\_\_ per question.
- C. IB is more \_\_\_\_\_...
- D. Technically, you are supposed to round at each step (\_\_\_\_\_ then \_\_\_\_\_) but \_\_\_\_\_ to be safe.

### IV. Dimensional Analysis

- A. \_\_\_\_\_!
- B. \_\_\_\_\_ don't count towards sig figs
- C. Using your calculator...Perform each function \_\_\_\_\_ (\_\_\_\_\_ could be confusing).

### V. Uncertainty/Error

- A. All measurements carry \_\_\_\_\_
  - 1. Usu. given with the \_\_\_\_\_
  - 2. If not given, it is \_\_\_\_\_ of the last digit
  - 3. Ex: 

<u>Meas.</u>	<u>Ans.</u>
8	
8.2	
8.236	
- B. \_\_\_\_\_ error: Error that \_\_\_\_\_ be controlled. Inherent in \_\_\_\_\_.
- C. \_\_\_\_\_ error: Error that \_\_\_\_\_ be controlled. Usu. a result of a \_\_\_\_\_.

### VI. Calculating Error

- A. When using many instruments, the error \_\_\_\_\_
  - 1. Adding and subtracting (p.13):
    - a. Add the \_\_\_\_\_ of the uncertainties together
    - b. \_\_\_\_\_
  - 2. Multiplying and dividing:
    - a. Change \_\_\_\_\_
    - b. \_\_\_\_\_
    - c. Change back to \_\_\_\_\_ if necessary.
  - 3. Ex:

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a.  $p_{\text{tot}} = p_1 + p_2$

b. # of moles in 10.00mL of a 1.00M solution

4. Accepted standard: If unc. is greater than \_\_\_\_\_ use \_\_\_\_\_, if less than \_\_\_\_\_ use \_\_\_\_\_.

### VII. Percent Error

A. Compares a measurement with an \_\_\_\_\_.

B. PE =

C. PE value can be \_\_\_\_\_. Take the \_\_\_\_\_ and treat it as a deviation.

### VIII. Derived Units

A. Units that are made up of SI base units.

1. \_\_\_\_\_

B. Many units are derived from SI units.

1. volume \_\_\_\_\_

2. joule \_\_\_\_\_

3. density \_\_\_\_\_