

## Rules for Operations

### Addition / Subtraction

1. Significant Figures: how many sig. figs does each of the following have?

Write your answer below each number listed!

|        |        |         |         |        |        |
|--------|--------|---------|---------|--------|--------|
| 102.02 | 305.00 | 0.10300 | 0.00200 | 10,000 | 0.0007 |
| 5      | 5      | 5       | 3       | 1      | 1      |

2. Round the following numbers to the nearest hundredth place (two decimal places)

$$32.659 = \underline{32.66}$$

$$85.490 = \underline{85.49}$$

$$0.025 = \underline{.03}$$

$$63.347 = \underline{63.35}$$

$$840.044 = \underline{840.04}$$

$$4.3410 = \underline{4.34}$$

$$9.896 = \underline{9.90}$$

$$55.997 = \underline{56.00}$$

3. Round off each of the following numbers to three sig. figs.

$$1,566,311 = \underline{1,570,000}$$

$$2.7651 \times 10^{-3} = \underline{2.77 \times 10^{-3}}$$

$$84,592 = \underline{84,600}$$

$$0.0011672 = \underline{.00117}$$

$$0.07759 = \underline{.0776}$$

4. Round off each of the following numbers to the indicated number of significant digits and write the answer in standard scientific notation.

$$0.00034159 \text{ to 3 sig figs} = \underline{3.42 \times 10^{-4}}$$

$$103.351 \times 10^2 \text{ to 4 sig figs} = \underline{1.034 \times 10^4}$$

$$17.9915 \text{ to 5 sig figs} = \underline{1.7992 \times 10^1}$$

$$3.365 \times 10^5 \text{ to 3 sig figs} = \underline{3.37 \times 10^5}$$

5. Molecular mass is the simply the mass of a molecule. This is found by using a periodic table of the elements and adding up the mass of each element in the molecule. Use the list of elements in the front of your book to determine the molecular mass of each of the following. Remember to apply the rules for adding/subtracting in regards to sig. figs.

Example: NaOH (sodium hydroxide)

|          |                |
|----------|----------------|
| Sodium   | 22.99          |
| Oxygen   | 16.00          |
| Hydrogen | <u>1.008</u>   |
|          | 39.998 = 40.00 |

$$\begin{array}{r} 137.3 \\ 16.0 \\ \hline 153.3 \end{array}$$

$$\text{HCl} = \underline{36.5}$$

$$\text{BaO} = \underline{153.3}$$

$$\text{KI} = \underline{166.0}$$

$$\begin{array}{r} 23.0 \\ 35.5 \\ \hline \end{array}$$

$$\text{NaCl} = \underline{58.5}$$

$$\text{AgCl} = \underline{143.4}$$

$$\text{LiF} = \underline{25.9}$$

6. Solve each of the following (they are all measurements!):

$$212.2 + 26.7 + 402.09 = \underline{641.0}$$

$$52.331 + 26.01 - 0.9981 = \underline{77.34}$$

$$8.936\text{g/mL} \times \frac{15.1\text{mL}}{3} = \underline{135\text{g}}$$

7. Solve these problems (they are all measurements, watch units!):

$$3.5\text{ m} + 22.25\text{ cm} + 0.00450\text{ km} = \underline{11.7\text{ m}}$$

$$17.6\text{g} / \underline{6.8\text{mL}} = \underline{2.6\text{g/mL}}$$