**Quiz 6A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Are the following statements true or false (8 points)?

|  |  |  |
| --- | --- | --- |
|  | If you get too much a reagent you should immediately return it to the original container to avoid wasting chemicals.  | False |
|  | When pouring a liquid, you should hold the lids between your fingers and pour away from the label.  | True |
|  | Weighing paper full of excess chemicals should be left by the balances to share with other students.  | False |
|  | Whenever anyone is working with chemicals or flames everyone must be wearing safety goggles or glasses.  | True  |
|  | The formation of a precipitate is experimental evidence that a chemical reaction has taken place.  | True |
|  | Strong and weak acids dissociate about 100%.  | False |
|  | You must measure exactly 3 mL of each solution before mixing them.  | False  |

1. Naproxen (Aleve) has 73.03% carbon, 6.13% hydrogen, and 20.84% oxygen (12 points).
	1. What is the empirical formula?

$$73.03\% C⇒73.03 g C×\frac{1 mol C}{12.011 g C}=6.080259762 mol C$$

$$6.13\% H⇒6.13 g H×\frac{1 mol H}{1.008 g H}=6.081349206 mol H$$

$$20.84\% O⇒20.84 g O×\frac{1 mol O}{15.999 g O}=1.302581411 mol O$$

$$C\_{\frac{6.080259762 mol}{1.302581411 mol}}H\_{\frac{6.081349206 mol }{1.302581411 mol}}O\_{\frac{1.302581411 mol}{1.302581411 mol}}=C\_{4.667853904}H\_{4.668690306}O\_{1}$$

Whole numbers were not obtained so multiply each factor by 3 to obtain whole numbers:

$$\left(C\_{4.667853904}H\_{4.668690306}O\_{1}\right)\_{3}=C\_{14.00356171}H\_{14.00607092}O\_{3}≈C\_{14}H\_{14}O\_{3}$$

* 1. What is the molecular formula if the molecular mass is about 230 g/mol?

$$ratio=\frac{molecular mass}{empirical mass}=\frac{230\frac{g}{mol}}{230.263\frac{g}{mol}}=0.998857828≈1$$

Therefore, the molecular and empirical formulas are both C14H14O3.