

**WS 7.1 Moles!**

Name: \_\_\_\_\_ P. \_\_\_\_\_

**Part I. Intro to Avogadro's Number**

1. Fill in the blanks:
- 1 "pair" = \_\_\_\_\_ socks, etc.
  - 1 "dozen" = \_\_\_\_\_ eggs, golf balls, etc.
  - 1 "gross" = \_\_\_\_\_ things
  - 1 "mole" =  $6.02 \times 10^{23}$  atoms, molecules, etc.

The number,  $6.02 \times 10^{23}$ , is also known as "Avogadro's Number" after the Italian scientist, Amadeo Avogadro. It is sometimes abbreviated as  $N_A$ . MEMORIZE THIS NUMBER!!!

- 2a. If you have 2.0 dozen water molecules, how many water molecules is this?
- b. If you have 2.00 moles of water molecules, how many water molecules is this?
- 3a. If you have 30. eggs, how many dozen eggs is this?
- b. If you have  $1.505 \times 10^{24}$  water molecules, how many moles of water is this?
4. How many helium atoms are in 4.6 moles of helium?
5. If you have  $1.8 \times 10^{21}$  carbon tetrachloride molecules, how many moles of carbon tetrachloride is this?
- 6a. How many oxygen ( $O_2$ ) molecules are in 0.0010 moles of oxygen?
- b. How many atoms are in the 0.0010 mole sample of oxygen, from part (a)?  
(Hint: how many atoms are in each  $O_2$  molecule?)
- 7a. If you have 5.00 moles of water, how many water molecules is this?
- b. How many atoms are in those 5.00 moles of water?  
(Hint, how many atoms are in each molecule of  $H_2O$ ?)
8. How many moles of carbon dioxide correspond to  $6.5 \times 10^{24}$  molecules?

### 7.1 Back Boxcars Galore

Show all work and units canceling

Name \_\_\_\_\_

Per \_\_\_\_\_

- 1) How many moles are in 24.0 grams of  $\text{FeF}_3$ ?
  
  
  
  
  
  
  
  
  
  
- 2) 0.056 moles of  $\text{Na}_2\text{SO}_4$  equals how many grams?
  
  
  
  
  
  
  
  
  
  
- 3) How many grams are in  $2.3 \times 10^{24}$  atoms of silver metal?
  
  
  
  
  
  
  
  
  
  
- 4) How many moles are there in  $7.40 \times 10^{23}$  *formula units* of  $\text{AgNO}_3$ ?
  
  
  
  
  
  
  
  
  
  
- 5) How many grams are in 2.50 moles of silver nitrate?
  
  
  
  
  
  
  
  
  
  
- 6) How many moles are in 122 grams of  $\text{Cu}(\text{NO}_3)_2$ ?
  
  
  
  
  
  
  
  
  
  
- 7) How many grams are in  $9.4 \times 10^{25}$  molecules of  $\text{H}_2$ ?
  
  
  
  
  
  
  
  
  
  
- 8) 230. grams of cobalt (II) chloride equals how many moles?