Chemistry 11 NAME: _____

## *Let's try some more...*

1. What is the Molar Mass of Propane $C_3H_8$?

2. What is the Molar Mass of $Al_2(SO_4)_3$?

3. What is the Molar Mass of one mole of Oxygen gas ($O_2$)?

4. What is the Mass of one molecule of oxygen gas?

5. What is the Mass of one mole of oxygen atoms?

6. What is the Mass of one atom of oxygen?

7. If a steel cylinder contains $3.01 \times 10^{23}$ carbon dioxide molecules, how many moles of oxygen atoms are in the cylinder?

8. How many carbon dioxide molecules are in 0.75 mol of $CO_2$?

9. How many atoms are there in 26.0g of carbon?

10. How many moles of carbon are in 26 g of carbon?

11. How many oxygen atoms are in 0.75 mol $CO_2$?

***Be sure to check your sig figs!***

Chemistry 11 NAME: _____

# More Moles, Please!

1. How many moles of Helium atoms are there in 6.46g of Helium?

2. How many grams of Zn are in 0.356 mol of Zn?

3. What is the molar mass of $SO_2$ and $C_8H_{10}N_4$?

4. How many moles of $CH_4$ are in 6.07g of $CH_4$?

5. How many hydrogen atoms are present in 25.6g of urea, $(NH_2)_2CO$?

6. How many moles of cobalt atoms are in $6.00 \times 10^9$ Co atoms?

7. How many grams of gold are there in 15.3 moles?

8. What is the mass in grams of a single atom of As?

9. The density of water at 4°C is 1.00g/mL. How many water molecules are present in 2.56mL of $H_2O$ at this temperature?

**STOP! Check your answers with your lab partners.**
**Call the teacher over for help if your answers are not matching...**

Chemistry 11 NAME: KEY

# More Moles, Please!

1. How many moles of Helium atoms are there in 6.46g of Helium?

$6.46\text{ g} \times \frac{1\text{ mol}}{4.003\text{ g}} = \boxed{1.62\text{ mol}}$

2. How many grams of Zn are in 0.356 mol of Zn?

$.356\text{ mol} \times \frac{65.4\text{ g}}{\text{mol}} = \boxed{23.3\text{ g}}$

3. What is the molar mass of $SO_2$ and $C_8H_{10}N_4$?

$64.1\text{ g/mol}$ (64.064) $\qquad \boxed{162.1\text{ g/mol}}$ (162.196)

4. How many moles of $CH_4$ are in 6.07g of $CH_4$?

$6.07\text{ g} \times \frac{1\text{ mol}}{16.04\text{ g}} = \boxed{.378\text{ mol}}$

5. How many hydrogen atoms are present in 25.6g of urea, $(NH_2)_2CO$?

$25.6\text{ g} \times \frac{1\text{ mole}}{60.04\text{ g}}$ (60.056) $\times \frac{6.02\times10^{23}\ (NH_2)_2CO}{1\text{ mole}} \times \frac{4\text{ H atoms}}{1\ (NH_2)_2CO} = \boxed{1.03\times10^{24}\text{ H atoms}}$

6. How many moles of cobalt atoms are in $6.00 \times 10^9$ Co atoms?

$6.00\times10^9\text{ Co} \times \frac{1\text{ mol}}{6.02\times10^{23}\text{ atoms}} = \boxed{9.97\times10^{-15}\text{ mol}}$

7. How many grams of gold are there in 15.3 moles?

$15.3\text{ mol} \times \frac{197.0\text{ g}}{\text{mol}} = 3014.1\text{ g} = \boxed{3.01\times10^3\text{ g}}$

8. What is the mass in grams of a single atom of As?

$\frac{74.9\text{ g}}{\text{mole}} \times \frac{1\text{ mol}}{6.02\times10^{23}\text{ atoms}} = \boxed{1.24\times10^{-22}\text{ g}}$

9. The density of water at 4°C is 1.00g/mL. How many water molecules are present in 2.56mL of $H_2O$ at this temperature?

$2.56\text{mL} \times \frac{1.00\text{g}}{1.00\text{mL}} \times \frac{\text{mole}}{18.02\text{g}} \times \frac{6.02\times10^{23}\text{ molec}}{\text{mole}} = \boxed{8.56\times10^{22}\text{ molecules}}$

**STOP! Check your answers with your lab partners.**
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Chemistry 11 NAME: KEY

***Let's try some more...***

1. What is the Molar Mass of Propane $C_3H_8$? 44.1 g/mole
2. What is the Molar Mass of $Al_2(SO_4)_3$? 342.3 g/mole
3. What is the Molar Mass of one mole of Oxygen gas ($O_2$)? 32.0 g/mole
4. What is the Mass of one molecule of oxygen gas?

$$1 \text{ molecule} \times \frac{1 \text{ mole}}{6.02\times10^{23} \text{ molecules}} \times \frac{32.0 \text{ g}}{1 \text{ mole}} = 5.32\times10^{-23} \text{ g}$$

5. What is the Mass of one mole of oxygen atoms? 16.0 g
6. What is the Mass of one atom of oxygen?

$$1 \text{ atom} \times \frac{1 \text{ mol}}{6.02\times10^{23} \text{ atoms}} \times \frac{16 \text{ g}}{\text{mol}} = 2.66\times10^{-23} \text{ g}$$

7. If a steel cylinder contains $3.01 \times 10^{23}$ carbon dioxide molecules, how many moles of oxygen atoms are in the cylinder?

$$3.01\times10^{23} \text{ CO}_2 \times \frac{1 \text{ mole}}{6.02\times10^{23} \text{ CO}_2} \times \frac{2 \text{ O atoms}}{1 \text{ CO}_2} = \begin{matrix} 1.00 \text{ mol} \\ \text{O atoms} \end{matrix}$$

8. How many carbon dioxide molecules are in 0.75 mol of $CO_2$?

$$.75 \text{ mol} \times \frac{6.02\times10^{23} \text{ CO}_2}{1 \text{ mol}} = 4.5\times10^{23} \text{ CO}_2 \text{ molecules}$$

9. How many atoms are there in 26.0g of carbon?

$$26.0 \text{ g} \times \frac{\text{mole}}{12.0 \text{ g}} \times \frac{6.02\times10^{23} \text{ atoms}}{\text{mole}} = 1.30\times10^{24} \text{ atoms}$$

10. How many moles of carbon are in 26 g of carbon?

$$26 \text{ g} \times \frac{\text{mole}}{12 \text{ g}} = 2.2 \text{ mol}$$

11. How many oxygen atoms are in 0.75 mol $CO_2$?

$$.75 \text{ mol} \times \frac{6.02\times10^{23} \text{ CO}_2}{\text{mol}} \times \frac{2 \text{ O atoms}}{1 \text{ CO}_2} = 9.0\times10^{23} \text{ O atoms}$$

***Be sure to check your sig figs!***