

General Chemistry  
Mr. MacGillivray  
Quiz #18:  
Molar Calculations

Give the formula mass or molecular mass for the following compounds.

1.  $\text{CoCl}_3$  \_\_\_\_\_ amu
  2.  $\text{Na}_2\text{SO}_4$  \_\_\_\_\_ amu
- Give the molar mass for the following compounds.
3.  $\text{H}_2\text{O}$  \_\_\_\_\_ g/mol
  4.  $\text{CaH}_2\text{O}_6$  \_\_\_\_\_ g/mol

Perform the following conversions. Show all work.

5. 5.00 g  $\text{H}_2\text{O}$  = \_\_\_\_\_ mol  $\text{H}_2\text{O}$
6. 5.00 mol  $\text{H}_2\text{O}$  = \_\_\_\_\_ g  $\text{H}_2\text{O}$
7. 7.00 g  $\text{CO}_2$  = \_\_\_\_\_ molecules  $\text{CO}_2$
8. 7.00 molecules  $\text{CO}_2$  = \_\_\_\_\_ g  $\text{CO}_2$

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Perform the following conversions. Show all work.

5. 5.00 g  $\text{H}_2\text{O}$  =  $\frac{0.278}{1.80} \text{ mol H}_2\text{O}$   $\times \frac{1 \text{ mol}}{18 \text{ g}} = 0.278$
6. 5.00 mol  $\text{H}_2\text{O}$  =  $90.0$  g  $\text{H}_2\text{O}$   $\times \frac{18.02}{1 \text{ mol}} = 90.0 \text{ g}$
7. 7.00 g  $\text{CO}_2$  =  $9.58 \times 10^{22}$  molecules  $\text{CO}_2$   $\times \frac{1 \text{ mol}}{44.01 \text{ g}} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} =$  \_\_\_\_\_ molecules
8. 7.00 molecules  $\text{CO}_2$  =  $5.17 \times 10^{-22}$  g  $\text{CO}_2$   $\times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \times \frac{44.01 \text{ g}}{1 \text{ mol}} =$  \_\_\_\_\_ g

$$\begin{array}{r} \text{Co } 58.93 \\ \text{Cl } 35.45 \times 3 \\ \hline 165.28 \end{array}$$

$$\begin{array}{l} \text{Na} \times 2 = 23.0 \times 2 = 64 \\ \text{S} = 32.1 = 32.1 \\ \text{O} \times 4 = 16 \times 4 = 64 \end{array}$$

$$(6 \times 12) + (12 \times 1.01) + (6 \times 16.0) = 180.12$$