

KEY:

$$1 \text{ mol} = 6.022 \times 10^{23} \text{ r.p.}$$

1 mol = molar mass from PT

Mixed 1 Step Practice Problems

1. How many grams of S are in 0.30 mole of sulfur?

$$\frac{0.30 \text{ mol S} \mid 32.06 \text{ g S}}{1 \text{ mol S}} = 9.6 \text{ g S}$$

2. How many moles of Cl are there in 45 g of Cl?

$$\frac{45 \text{ g Cl} \mid 1 \text{ mol Cl}}{35.45 \text{ g Cl}} = 1.3 \text{ mol Cl}$$

3. Change 34 g of lithium to moles of Li?

$$\frac{34 \text{ g Li} \mid 1 \text{ mol Li}}{6.94 \text{ g Li}} = 4.9 \text{ mol Li}$$

4. How many hydrogen atoms are in 3.14 mol of H?

$$\frac{3.14 \text{ mol H} \mid 6.022 \times 10^{23} \text{ atoms H}}{1 \text{ mol H}} = 1.89 \times 10^{24} \text{ atoms H}$$

5. How many grams HCl are in 3.4 moles of HCl?

$$\frac{3.4 \text{ mol HCl} \mid 36.46 \text{ g HCl}}{1 \text{ mol HCl}} = 123.96 = 120 \text{ g HCl}$$

6. How many molecules are in 2.79 mol of NH_3 ?

$$\frac{2.79 \text{ mol NH}_3 \mid 6.022 \times 10^{23} \text{ molecules NH}_3}{1 \text{ mol NH}_3} = 1.68 \times 10^{24} \text{ molecules NH}_3$$

7. What is the mass of $\text{C}_3\text{H}_6\text{O}_2$ (in grams) in 5.20 moles of $\text{C}_3\text{H}_6\text{O}_2$.

$$\frac{5.20 \text{ mol C}_3\text{H}_6\text{O}_2 \mid 74.09 \text{ g C}_3\text{H}_6\text{O}_2}{1 \text{ mol C}_3\text{H}_6\text{O}_2} = 385 \text{ g C}_3\text{H}_6\text{O}_2$$

$\begin{matrix} 3(12.01) \\ 6(1.01) \\ 2(16.00) \\ \hline 74.09 \end{matrix}$

8. How many moles of HF is 1.29×10^{24} molecules of HF?

$$\frac{1.29 \times 10^{24} \text{ molecules HF} \mid 1 \text{ mol HF}}{6.022 \times 10^{23} \text{ molecules HF}} = 2.14 \text{ mol HF}$$

9. How many moles of SiH_4 are in 8.5 g of SiH_4 ?

$$\frac{8.5 \text{ g SiH}_4 \mid 1 \text{ mol SiH}_4}{32.13 \text{ g SiH}_4} = 0.26 \text{ mol SiH}_4$$

$\begin{matrix} 1(28.09) \\ 4(1.01) \\ \hline 32.13 \end{matrix}$

10. How many moles of NaBr are in 7.36×10^{24} formula units of NaBr?

$$\frac{7.36 \times 10^{24} \text{ fu NaBr} \mid 1 \text{ mol NaBr}}{6.022 \times 10^{23} \text{ fu NaBr}} = 12.2 \text{ mol NaBr}$$

11. How many atoms are in 2.4×10^{-4} moles of francium?

$$\frac{2.4 \times 10^{-4} \text{ mol Fr} \mid 6.022 \times 10^{23} \text{ atoms Fr}}{1 \text{ mol Fr}} = 1.4 \times 10^{20} \text{ atoms Fr}$$