

## Molar Conversions Practice, Part III

Calculate the molar mass of each of the following substances.

$$1) \text{BaO} = \underline{153.3} \text{ g/mol}$$

$$2) \text{Al}_2\text{S}_3 = \underline{150.3} \text{ g/mol}$$

$$3) \text{Ba}(\text{NO}_3)_2 = \underline{261.3} \text{ g/mol}$$

$$4) \text{NaOH} = \underline{40.0} \text{ g/mol}$$

$$5) \text{P}_4\text{O}_{10} = \underline{284} \text{ g/mol}$$

$$(31 \times 4) + (16 \times 10) = 284$$

$$23 + 1 + 16$$

Perform the following conversions. Show all work.

$$6) 50.8 \text{ g BaO} = \underline{\quad} \text{ mol}$$

$$50.8 \text{ g} \times \frac{1 \text{ mol}}{153.3 \text{ g}} = \underline{0.331} \text{ mol}$$

$$7) 75.0 \text{ g Ba}(\text{NO}_3)_2 = \underline{\quad} \text{ mol}$$

$$75.0 \text{ g Ba}(\text{NO}_3)_2 \times \frac{1 \text{ mol}}{261.3 \text{ g}} = \underline{0.287} \text{ mol}$$

$$8) 3.66 \times 10^{-5} \text{ g P}_4\text{O}_{10} = \underline{\quad} \text{ mol}$$

$$3.66 \times 10^{-5} \text{ g P}_4\text{O}_{10} \times \frac{1 \text{ mol}}{284 \text{ g}} = \underline{1.29 \times 10^{-7} \text{ mol}}$$

$$9) 2.72 \times 10^3 \text{ g Al}_2\text{S}_3 = \underline{\quad} \text{ mol}$$

$$2.72 \times 10^3 \text{ g} \times \frac{1 \text{ mol}}{150.3 \text{ g}} = \underline{18.1} \text{ mol}$$

$$10) 160.0 \text{ g NaOH} = \underline{4.00} \text{ mol}$$

$$160.0 \text{ g} \times \frac{1 \text{ mol}}{40 \text{ g}} = \underline{4 \text{ mol}} = 4.00 \text{ mol}$$

Perform the following conversions. Show all work.

$$11) 1.30 \text{ mol Ca}(\text{OH})_2 = \underline{\quad} \text{ g}$$

$$1.30 \text{ mol} \times \frac{74.1 \text{ g}}{1 \text{ mol}} = \underline{96.3} \text{ g}$$

$$12) 1.93 \text{ mol Fe} = \underline{\quad} \text{ g}$$

$$1.93 \text{ mol} \times \frac{55.85 \text{ g}}{1 \text{ mol}} = \underline{108} \text{ g}$$

$$13) 0.0937 \text{ mol C}_6\text{H}_{12}\text{O}_6 = \underline{\quad} \text{ g}$$

$$0.0937 \text{ mol C}_6\text{H}_{12}\text{O}_6 \times \frac{180 \text{ g}}{1 \text{ mol}} = \underline{16.9} \text{ g}$$

14)  $17.4 \text{ mol C}_4\text{H}_{10} = \underline{1010} \text{ g}$

~~$17.4 \text{ mol C}_4\text{H}_{10} \times \frac{58.12 \text{ g}}{1 \text{ mol}} = 1009.2 \text{ g}$~~

$17.4 \text{ mol C}_4\text{H}_{10} \times \frac{58.12 \text{ g}}{1 \text{ mol}} = \underline{1009.2 \text{ g}}$

15)  $1.19 \times 10^3 \text{ mol U} = \underline{\quad} \text{ g}$

$1.19 \times 10^3 \text{ mol U} \times \frac{238 \text{ g}}{1 \text{ mol U}} = \underline{2.83 \times 10^5 \text{ g}}$

1010g

Perform the following conversions. Show all work.

16)  $1.75 \text{ g FeO} = \underline{\quad} \text{ mol FeO}$

$1.75 \text{ g FeO} \times \frac{1 \text{ mol FeO}}{71.85 \text{ g FeO}} = \underline{0.0244 \text{ mol}}$

17)  $1.75 \text{ g FeO} = \underline{\quad} \text{ formula units of FeO}$

$1.75 \text{ g FeO} \times \frac{1 \text{ mol FeO}}{71.85 \text{ g FeO}} \times \frac{6.02 \times 10^{23} \text{ f.u.}}{1 \text{ mol FeO}} = \underline{1.47 \times 10^{22} \text{ f.u.}}$

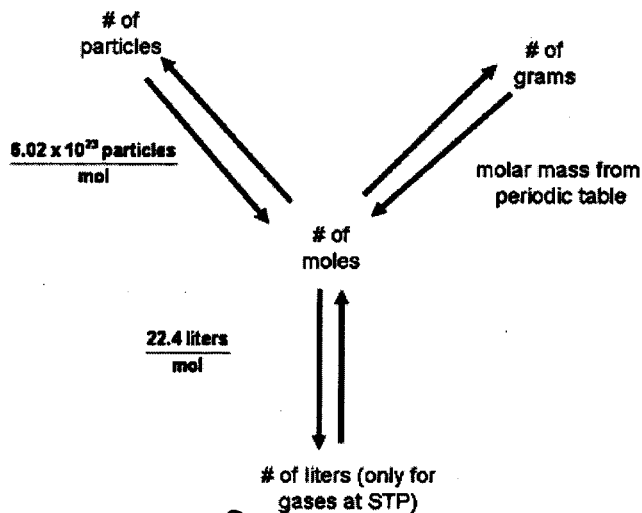
18)  $7.30 \times 10^{25} \text{ molecules of H}_2\text{O} = \underline{\quad} \text{ mol H}_2\text{O}$

$7.30 \times 10^{25} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} = \underline{121 \text{ mol}}$

19)  $7.30 \times 10^{25} \text{ molecules of H}_2\text{O} = \underline{\quad} \text{ g H}_2\text{O}$

$7.30 \times 10^{25} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \times \frac{18.02 \text{ g}}{1 \text{ mol}} = 2183 = 2180 = \underline{2.18 \times 10^3 \text{ g}}$

20)  $109 \text{ g Au} = \underline{3.33 \times 10^{23}} \text{ atoms Au}$



$109 \text{ g Au} \times \frac{1 \text{ mol Au}}{197 \text{ g Au}} \times \frac{6.02 \times 10^{23} \text{ atoms Au}}{1 \text{ mol Au}} = 3.33 \times 10^{23}$