

Worksheet: Molar Mass

Key

1. Calculate the molar mass for the following:

a. KCl

$$39.10 + 35.45$$

$$74.55 \frac{\text{g}}{\text{mol}}$$

b. Fe_2O_3

$$2(55.85) + 3(16.00)$$

$$159.7 \frac{\text{g}}{\text{mol}}$$

c. Li_2CO_3

$$2(6.94) + 12.01 + 3(16.00)$$

$$73.89 \frac{\text{g}}{\text{mol}}$$

d. $\text{Al}_2(\text{SO}_4)_3$

$$2(26.98) + 3(32.07) + 12(16.00)$$

$$342.17 \frac{\text{g}}{\text{mol}}$$

2. In a bottle of soda, there is 0.25 mole of CO_2 . How many grams of CO_2 are in the bottle?

$$0.25 \text{ mol } \text{CO}_2 \times \frac{44.01 \text{ g } \text{CO}_2}{1 \text{ mol } \text{CO}_2} = \boxed{11 \text{ g } \text{CO}_2}$$

$$12.01 + 2(16.00) = 44.01 \frac{\text{g}}{\text{mol}}$$

3. How many oxygen atoms are there in 48.0 g of O and 48.0 g of O_2 ?

$$48.0 \text{ g O} \times \frac{1 \text{ mol O}}{16.0 \text{ g O}} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = \boxed{1.81 \times 10^{24} \text{ atoms O}}$$

$$48.0 \text{ g} \times \frac{1 \text{ mol } \text{O}_2}{32.0 \text{ g } \text{O}_2} \times \frac{2 \text{ mol O}}{1 \text{ mol } \text{O}_2} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = \boxed{1.81 \times 10^{24} \text{ atoms O}}$$

4. Convert 53.8 grams of MgI_2 to moles MgI_2 .

$$53.8 \text{ g } \text{MgI}_2 \times \frac{1 \text{ mol}}{278.11 \frac{\text{g}}{\text{mol}} \text{ MgI}_2} = \boxed{0.193 \text{ mol } \text{MgI}_2}$$

$$24.31 + 2(126.9) = 278.11 \frac{\text{g}}{\text{mol}}$$