

Mass, Moles, and Molar Mass

Answer Key

$$1. \quad M = \frac{m}{n}$$

$$M \cdot n = \frac{m}{\cancel{n}} \cdot \cancel{n}$$

$$m = Mn$$

$$m = \left(38.00 \frac{\text{g}}{\text{mol}} \right) (4.7 \text{ mol})$$

$$m = 1.8 \times 10^2 \text{ g}$$

$$2. \quad M = \frac{m}{n}$$

$$M = \frac{47.8 \text{ g}}{0.15 \text{ g}}$$

$$M = 3.2 \times 10^2 \frac{\text{g}}{\text{mol}}$$

$$3. \quad M_{\text{Al}}: 26.98 \text{ g/mol}$$

$$M_{\text{S}}: 32.07 \text{ g/mol}$$

$$M_{\text{O}}: 16.00 \text{ g/mol}$$

$$M_{\text{Al}_2(\text{SO}_4)_2} = 2 \left(26.98 \frac{\text{g}}{\text{mol}} \right) + 3 \left(32.07 \frac{\text{g}}{\text{mol}} \right) + 12 \left(16.00 \frac{\text{g}}{\text{mol}} \right)$$

$$M_{\text{Al}_2(\text{SO}_4)_2} = 342.17 \frac{\text{g}}{\text{mol}}$$

$$4. \quad M = 6 \left(12.01 \frac{\text{g}}{\text{mol}} \right) + 12 \left(1.01 \frac{\text{g}}{\text{mol}} \right) + 6 \left(16.00 \frac{\text{g}}{\text{mol}} \right)$$

$$M = 180.18 \frac{\text{g}}{\text{mol}}$$

$$M = \frac{m}{n}$$

$$M \cdot n = \frac{m}{\cancel{n}} \cdot \cancel{n}$$

$$\frac{Mn}{M} = \frac{m}{M}$$

$$n = \frac{m}{M}$$

$$n = \frac{360 \text{ g}}{180.18 \frac{\text{g}}{\text{mol}}}$$

$$n = 2.00 \text{ mol}$$

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Answer Key (continued)

$$5. \quad M = 4\left(12.01 \frac{\text{g}}{\text{mol}}\right) + 10\left(1.01 \frac{\text{g}}{\text{mol}}\right) = 58.14 \frac{\text{g}}{\text{mol}}$$

$$M = \frac{m}{n}$$

$$M \cdot n = \frac{m}{\cancel{n}} \cdot \cancel{n}$$

$$\frac{Mn}{M} = \frac{m}{M}$$

$$n = \frac{m}{M}$$

$$n = \frac{1.26 \text{ g}}{58.14 \frac{\text{g}}{\text{mol}}}$$

$$n = 2.17 \times 10^{-2} \text{ mol}$$