

CHAPTER 7	Determining the Number of Moles in a Sample Answer Key	BLM 7.0.8A
ANSWER KEY		

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

$$n_{\text{NaOH}} = \frac{20.0 \text{ g}}{40.00 \frac{\text{g}}{\text{mol}}}$$

$$n_{\text{NaOH}} = 0.500 \text{ mol}$$

$$2. \quad n = \frac{PV}{RT}$$

$$n_{\text{Ar}} = \frac{(125 \text{ kPa})(1.46 \text{ L})}{\left(8.314 \frac{\text{kPa} \cdot \text{L}}{\text{mol} \cdot \text{K}}\right)(305 \text{ K})}$$

$$n_{\text{Ar}} = 0.0720 \text{ mol}$$

$$3. \quad n = cV$$

$$n_{\text{H}_2\text{SO}_4} = \left(1.50 \frac{\text{mol}}{\text{L}}\right)(1.25 \text{ L})$$

$$n_{\text{H}_2\text{SO}_4} = 1.88 \text{ mol}$$

$$4. \quad M_{\text{CuCl}_2} = 63.55 \frac{\text{g}}{\text{mol}} + 2 \left(35.45 \frac{\text{g}}{\text{mol}}\right) = 134.45 \frac{\text{g}}{\text{mol}}$$

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

$$n_{\text{CuCl}_2} = \frac{10.5 \text{ g}}{134.45 \frac{\text{g}}{\text{mol}}}$$

$$n_{\text{CuCl}_2} = 0.0781 \text{ mol}$$

CHAPTER 7	Determining the Number of Moles in a Sample Answer Key (continued)	BLM 7.0.8A
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5. $n = cV$

$$n_{\text{Ba}(\text{NO}_3)_2} = \left(0.0075 \frac{\text{mol}}{\text{L}}\right)(0.0330 \text{ L})$$

$$n_{\text{Ba}(\text{NO}_3)_2} = 2.48 \times 10^{-4} \text{ mol}$$

6. $n = \frac{PV}{RT}$

$$T = 273.15 + 22^\circ\text{C}$$

$$T = 295.15 \text{ K}$$

$$n_{\text{Cl}_2} = \frac{(150 \text{ kPa})(0.438 \text{ L})}{\left(8.314 \frac{\text{kPa} \cdot \text{L}}{\text{mol} \cdot \text{K}}\right)(295.15 \text{ K})}$$

$$n_{\text{Cl}_2} = 0.0268 \text{ mol}$$

7. $M_{\text{C}_{12}\text{H}_{22}\text{O}_{11}} = 12\left(12.01 \frac{\text{g}}{\text{mol}}\right) + 22\left(1.01 \frac{\text{g}}{\text{mol}}\right) + 11\left(16.00 \frac{\text{g}}{\text{mol}}\right) = 342.34 \frac{\text{g}}{\text{mol}}$

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

$$n_{\text{C}_{12}\text{H}_{22}\text{O}_{11}} = \frac{150 \text{ g}}{342.34 \frac{\text{g}}{\text{mol}}}$$

$$n_{\text{C}_{12}\text{H}_{22}\text{O}_{11}} = 0.438 \text{ mol}$$