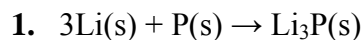


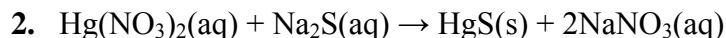
CHAPTER 7	Mixed Stoichiometry Quiz Answer Key	BLM 7.2.9A
ANSWER KEY		



(a) $3.2 \text{ mol Li} \times \frac{1 \text{ mol Li}_3\text{P}}{3 \text{ mol Li}} = 1.1 \text{ mol Li}_3\text{P(s)}$

(b) $0.500 \text{ mol P} \times \frac{3 \text{ mol Li}}{1 \text{ mol P}} \times 6.94 \frac{\text{g}}{\text{mol}} \text{Li} = 10.4 \text{ g Li(s)}$

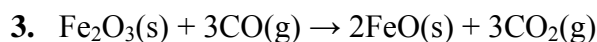
(c) $45.0 \text{ g P} \times \frac{\text{mol}}{30.97 \text{ g}} \text{P} \times \frac{3 \text{ mol Li}}{1 \text{ mol P}} \times 6.94 \frac{\text{g}}{\text{mol}} \text{Li} = 30.3 \text{ g Li(s)}$



(a) $2.85 \text{ mol Na}_2\text{S} \times \frac{2 \text{ mol NaNO}_3}{1 \text{ mol Na}_2\text{S}} = 5.70 \text{ mol NaNO}_3(\text{aq})$

(b) $0.540 \text{ L Na}_2\text{S} \times 0.653 \frac{\text{mol}}{\text{L}} \text{Na}_2\text{S} \times \frac{1 \text{ mol Hg}(\text{NO}_3)_2}{1 \text{ mol Na}_2\text{S}} \times \frac{\text{L}}{0.150 \text{ mol}} \text{Hg}(\text{NO}_3)_2 = 2.35 \text{ L Hg}(\text{NO}_3)_2(\text{aq})$

(c) $1.00 \text{ L Na}_2\text{S} \times 0.550 \frac{\text{mol}}{\text{L}} \text{Na}_2\text{S} \times \frac{1 \text{ mol HgS}}{1 \text{ mol Na}_2\text{S}} \times 232.66 \frac{\text{g}}{\text{mol}} \text{HgS} = 128 \text{ g HgS(s)}$



(a) $n = \frac{PV}{RT}$

$$n_{\text{CO}} = \frac{(130.5 \text{ kPa})(27.3 \text{ L})}{\left(8.314 \frac{\text{kPa} \cdot \text{L}}{\text{mol} \cdot \text{K}}\right)(25.0^\circ \text{C} + 273.15)}$$

$$n_{\text{CO}} = 0.063659 \text{ mol}$$

$$0.063659 \text{ mol CO} \times 28.01 \frac{\text{g}}{\text{mol}} \text{CO} \times \frac{1 \text{ mol Fe}_2\text{O}_3}{3 \text{ mol CO}} \times 159.70 \frac{\text{g}}{\text{mol}} \text{Fe}_2\text{O}_3 = 94.8 \text{ g Fe}_2\text{O}_3(\text{s})$$

CHAPTER 7	Mixed Stoichiometry Quiz Answer Key (continued)	BLM 7.2.9A
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$$(b) \quad 10.7 \text{ g Fe}_2\text{O}_3 \times \frac{\text{mol}}{159.70 \text{ g}} \text{Fe}_2\text{O}_3 \times \frac{2 \text{ mol FeO}}{1 \text{ mol Fe}_2\text{O}_3} \times 71.85 \frac{\text{g}}{\text{mol}} \text{FeO} = 9.63 \text{ g FeO(s)}$$

$$(c) \quad n = \frac{PV}{RT}$$

$$n_{\text{CO}_2} = \frac{(101.325 \text{ kPa})(40.8 \text{ L})}{\left(8.314 \frac{\text{kPa} \cdot \text{L}}{\text{mol} \cdot \text{K}}\right)(273.15 \text{ K})}$$

$$n_{\text{CO}_2} = 1.82 \text{ mol}$$

$$1.82 \text{ mol CO}_2 \times \frac{3 \text{ mol CO}}{3 \text{ mol CO}_2} = 1.82 \text{ mol CO(g)}$$

Since both gases are in STP and the number of moles is equal, the volumes must also be equal. A 40.8L volume of carbon monoxide would form.