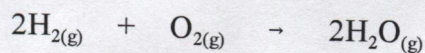


For the following problems, SHOW ALL WORK.

1. Given the reaction,

to produce 0.600 moles of $\text{H}_2\text{O}_{(g)}$,

- a.) how many moles of
- H_2
- are needed?

$$\frac{2\text{H}_2}{2\text{H}_2\text{O}} = \frac{X\text{H}_2}{0.600\text{H}_2\text{O}} \quad \boxed{X = 0.600 \text{ mole H}_2}$$

- b.) how many liters of
- O_2
- are needed?

$$\frac{1\text{O}_2}{2\text{H}_2} = \frac{X\text{O}_2}{0.600\text{H}_2} \quad \underline{X = 0.300 \text{ mole O}_2}$$

$$\frac{22.4\text{L}}{1\text{mole}} = \frac{X\text{L}}{0.300\text{mole}} \quad \boxed{X = 6.72\text{L}}$$

- c.) how many molecules of
- O_2
- are needed?

$$\frac{6.02 \times 10^{23} \text{ molecules}}{1\text{mole}} = \frac{X \text{ molecules}}{0.300\text{mole}}$$

$$\boxed{X = 1.80 \times 10^{23} \text{ molecules O}_2}$$

2. Given the reaction



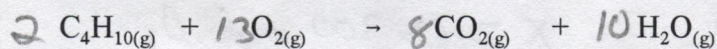
how many grams of NH_3 will be required to react with 43g of O_2 ?

$$\frac{43 \text{g O}_2}{32 \text{g/mole}} = 1.34 \text{ mole O}_2$$

$$\frac{4 \text{ mole NH}_3}{5 \text{ mole O}_2} = \frac{x \text{ mole NH}_3}{1.34 \text{ mole O}_2} \quad x = 1.072 \text{ mole NH}_3$$

$$(1.072 \text{ mole}) (17 \text{ g/mole}) = \boxed{18 \text{g NH}_3}$$

3. Given the following reaction



determine the number of liters of carbon dioxide produced when 78.0 liters of oxygen gas is used.

$$\frac{8 \text{ CO}_2}{13 \text{ O}_2} = \frac{x \text{ CO}_2}{78}$$

$$\boxed{x = 48 \text{ L CO}_2}$$