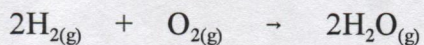


For the following problems, SHOW ALL WORK.

1. Given the reaction,

to produce 0.800 moles of $\text{H}_2\text{O}_{(g)}$,

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

1:1

0.800 mole H_2

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

2:1 \Rightarrow 0.400 mole O_2

$$\frac{22.4 \text{ L}}{1 \text{ mole}} = \frac{x \text{ L}}{0.400 \text{ mole}}$$

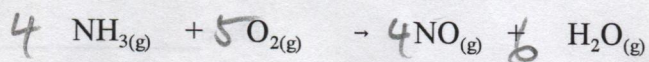
8.96 L O_2

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

$$(0.400 \text{ mole}) \left(6.02 \times 10^{23} \right) =$$

 2.4×10^{23} molecules O_2

2. Given the reaction



how many grams of NH_3 will be required to react with 63g of O_2 ?

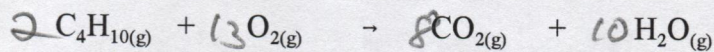
$$\frac{63g}{32g/mole} = 1.97 \text{ mole } \text{O}_2$$

$$\frac{4 \text{NH}_3}{5 \text{O}_2} = \frac{x \text{NH}_3}{1.97 \text{ O}_2} \quad x = 1.58 \text{ mole NH}_3$$

$$(1.58 \text{ NH}_3)(17g/mole)$$

$$\boxed{27g \text{ NH}_3}$$

3. Given the following reaction



determine the number of liters of carbon dioxide produced when 36.0 liters of oxygen gas is used.

$$\frac{8 \text{CO}_2}{13 \text{O}_2} = \frac{x \text{ CO}_2}{36L \text{ O}_2}$$

$$\boxed{22L \text{ CO}_2}$$