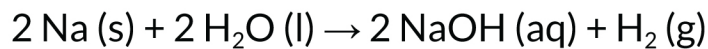


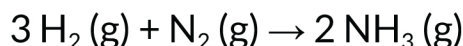
# STOICHIOMETRY Worksheet

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1. How many moles of sodium will react with water to produce 4.0 mol of hydrogen in the following reaction?

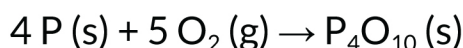


2. Ammonia is made industrially by reacting nitrogen and hydrogen under high pressure and temperature and in the presence of a catalyst. The equation is:



If 4.0 mol of  $\text{H}_2$  react, how many moles of  $\text{NH}_3$  will be produced?

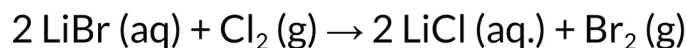
3. Phosphorous burns in oxygen to produce phosphorous oxide in the following reaction:



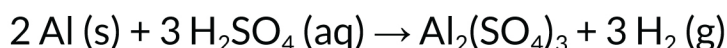
a. What amount (in moles) of phosphorous will be needed to produce 3.25 mol of  $\text{P}_4\text{O}_{10}$ ?

b. How many moles of  $\text{P}_4\text{O}_{10}$  are produced from 2.74 moles of phosphorous?

4. How many moles of lithium chloride will be formed by the reaction of chlorine with 0.046 mol of lithium bromide in the following reaction?



5. Aluminum will react with sulfuric acid in the following reaction.

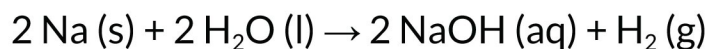


How many moles of  $\text{H}_2\text{SO}_4$  will react with 18 mol of Al?

# STOICHIOMETRY Worksheet

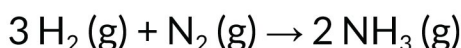
## Answers

1. How many moles of sodium will react with water to produce 4.0 mol of hydrogen in the following reaction?



$$4 \text{ mol H}_2 \times (2 \text{ mol Na} / 1 \text{ mol H}_2) = 8 \text{ mol Na}$$

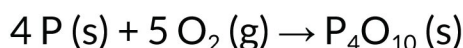
2. Ammonia is made industrially by reacting nitrogen and hydrogen under high pressure and temperature and in the presence of a catalyst. The equation is:



If 4.0 mol of H<sub>2</sub> react, how many moles of NH<sub>3</sub> will be produced?

$$4.0 \text{ mol H}_2 \times (2 \text{ mol NH}_3 / 3 \text{ mol H}_2) = 2.67 \text{ mol NH}_3$$

3. Phosphorous burns in oxygen to produce phosphorous oxide in the following reaction:



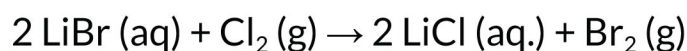
a. What amount (in moles) of phosphorous will be needed to produce 3.25 mol of P<sub>4</sub>O<sub>10</sub>?

$$3.25 \text{ mol P}_4\text{O}_{10} \times (4 \text{ mol P} / 1 \text{ mol P}_4\text{O}_{10}) = 13 \text{ mol P}$$

b. How many moles of P<sub>4</sub>O<sub>10</sub> are produced from 2.74 moles of phosphorous?

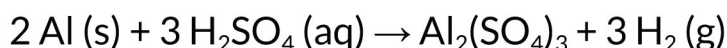
$$2.74 \text{ mol P} \times (1 \text{ mol P}_4\text{O}_{10} / 4 \text{ mol P}) = 0.685 \text{ mol P}_4\text{O}_{10}$$

4. How many moles of lithium chloride will be formed by the reaction of chlorine with 0.046 mol of lithium bromide in the following reaction?



$$0.046 \text{ mol LiBr} \times (2 \text{ mol LiCl} / 2 \text{ mol LiBr}) = 0.046 \text{ mol LiCl}$$

5. Aluminum will react with sulfuric acid in the following reaction.



How many moles of H<sub>2</sub>SO<sub>4</sub> will react with 18 mol of Al?

$$18 \text{ mol Al} \times (3 \text{ mol H}_2\text{SO}_4 / 2 \text{ mol Al}) = 27 \text{ mol of H}_2\text{SO}_4$$