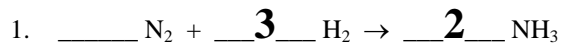
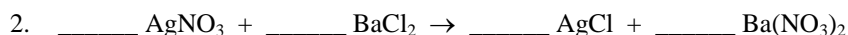


STOICHIOMETRY WORKSHEET 3, ALL TYPES.



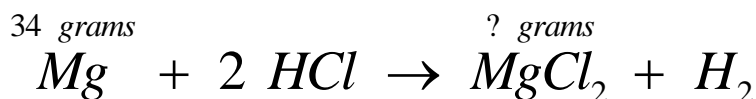
How many moles of hydrogen are needed to react with two moles nitrogen?

$$\frac{2 \text{ mol } N_2}{1 \text{ mol } N_2} \times \frac{3 \text{ mol } H_2}{1 \text{ mol } N_2} = 6 \text{ mol } H_2$$

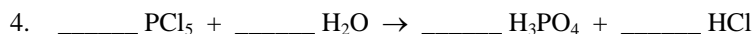


How many grams of silver chloride are produced from 5.0 grams of silver nitrate reacting with excess barium chloride?

3. How many grams of magnesium chloride are produced from the reaction of 34 grams of magnesium and excess hydrochloric acid, HCl? Hydrogen gas is also produced.



$$\frac{34 \text{ g } Mg}{24.3 \text{ g}} \times \frac{1 \text{ mol } Mg}{1 \text{ mol } Mg} \times \frac{1 \text{ mol } MgCl_2}{1 \text{ mol } Mg} \times \frac{95.2 \text{ g}}{1 \text{ mol } MgCl_2} = 133 \text{ g } MgCl_2$$



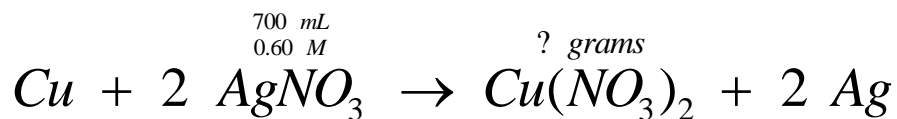
When Mike goes into the lab and has 4.70 grams of phosphorus pentachloride react with excess water - Mike recovers 1.75 grams of phosphoric acid, H_3PO_4 .

- a) Calculate the theoretical yield of phosphoric acid (in grams)

- b) Calculate the percent yield of phosphoric acid

$\% \text{ Yield} = \frac{\text{lab amount}}{\text{stoichiometric amount}} \times 100$
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5. a) How many grams of copper(II)nitrate is produced when excess copper metal is reacted with and replaces Ag in 700 mL of a 0.60 M AgNO₃ solution? Ag is the other product.



$$\frac{700 \text{ mL}}{1000 \text{ mL}} \times \frac{L}{L} \times \frac{0.6 \text{ mol AgNO}_3}{L} \times \frac{1 \text{ mol Cu(NO}_3)_2}{2 \text{ mol AgNO}_3} \times \frac{187.57 \text{ g}}{1 \text{ mol Cu(NO}_3)_2} = 39.4 \text{ g Cu(NO}_3)_2$$

- b) How many grams of silver would be produced?

$$\frac{700 \text{ mL}}{1000 \text{ mL}} \times \frac{L}{L} \times \frac{0.6 \text{ mol AgNO}_3}{L} \times \frac{2 \text{ mol Ag}}{2 \text{ mol AgNO}_3} \times \frac{107.9 \text{ g}}{1 \text{ mol Ag}} = 45.3 \text{ g Ag}$$

- 6) a) Zinc metal completely replaces hydrogen in a 4.0 M HCl solution to form hydrogen gas and zinc chloride. Calculate the volume (in mL) of the 4.0 M HCl solution when 73.0 grams of zinc is used.

- b) How many grams of ZnCl₂ are produced?