SCH 3U
PERCENT YIELD

$$\boldsymbol{percent\ yield} = \frac{\boldsymbol{actual\ yield}}{\boldsymbol{theoretical\ yield}} \times \mathbf{100\%} \quad \textit{or} \quad \%\boldsymbol{Y} = \frac{\boldsymbol{AY}}{\boldsymbol{TY}} \times \mathbf{100\%}$$

ACTUAL YIELD

- formed by performing an experiment
- mass of the product

THEORETICAL YIELD

- determined by calculations using balanced chemical equations
- mass of the product

EXAMPLES:

① If 189 g of lead (II) sulfide was actually obtained in a reaction for which the theoretical yield was 239 g, calculate the percentage yield.

② In the production of sodium chlorate from sodium chloride and oxygen gas, 30.6 g of product was measured.

A) If the percent yield is expected to be 88%, what is the theoretical yield?
B) What mass of oxygen gas is needed?

③ Heating calcium carbonate will decompose it into its acidic oxide and basic oxide.
If 20.4 g of calcium carbonate are heated in an experiment, 10.6 g of the metal oxide are actually produced. Determine the percent yield of the metal oxide.

④ What are the least amounts of hydrogen gas and nitrogen gas needed to produce 1 kg of ammonia if it is known that the percent yield in an industrial process is 60%.