

*Answers on the last page!

Chemistry 11
Stoichiometry Review

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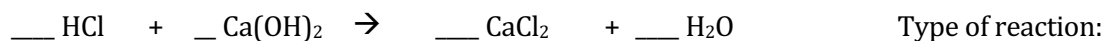
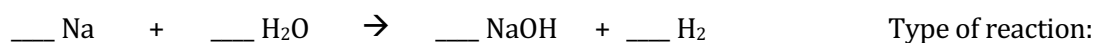
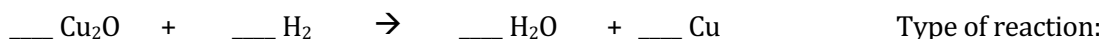
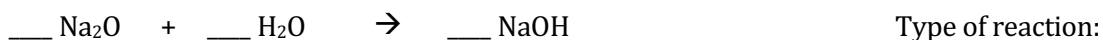
1. Name the following compounds:

- A. NaBr
- B. AgI
- C. HgHCO₃
- D. CuSO₄
- E. NO₂

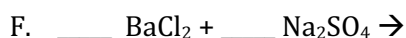
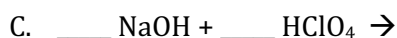
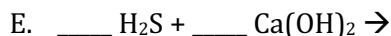
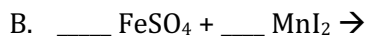
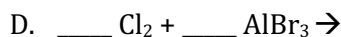
2. Write the formulas for the following:

- A. Nitrogen monoxide
- B. Sodium nitrite
- C. Calcium sulfide
- D. Magnesium acetate
- E. Oxygen difluoride

3. Balance the following and identify the type of reaction



4. Complete and balance the following reactions:



5. Consider the following reaction:



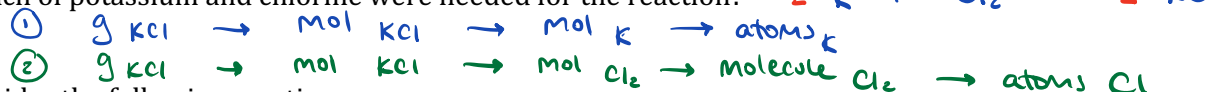
a. Calculate the mass of hydrogen gas produced when 84.5 g of Cu metal reacts.



b. If 3.85 L of H₂ at STP is produced, what mass of Cu reacted?



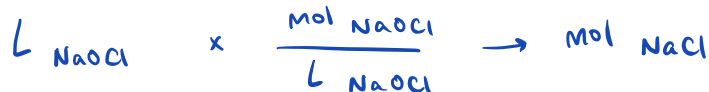
6. A reaction between potassium and chlorine produced 175.0 grams of the product. How many atoms of each of potassium and chlorine were needed for the reaction?



7. Consider the following reaction:



a. If 60.0 mL of 1.5 M NaOCl reacts with excess ammonia, how many moles of NaCl will be produced?



b. If 39.7 g of water is produced, what volume of 3.42 M NaOCl is needed?

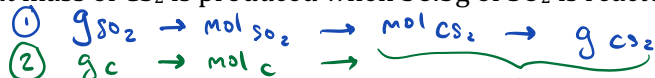


8. Consider the reaction below:

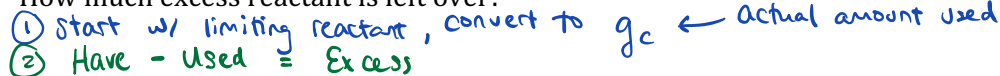


Calculate for both reactants
→ find limiting

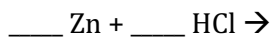
a. What mass of CS₂ is produced when 36.5g of SO₂ is reacted with 18.5 g of C?



b. How much excess reactant is left over?

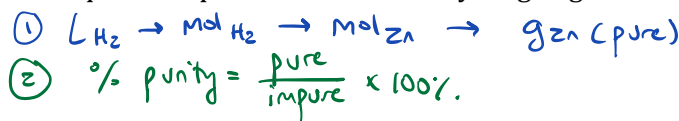


9. Consider the reaction below (Zn is a 2+ ion):



a. Predict the products and balance the chemical reaction

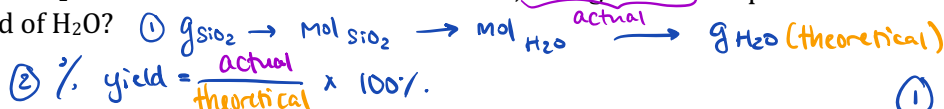
b. What mass of impure zinc is required to produce 955 mL of hydrogen gas at STP? The zinc has a purity of 84.5%



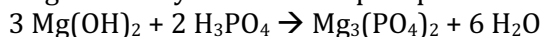
10. Consider the reaction below:



When 12.20 g of SiO₂ is reacted with a small excess of HF, 2.50 g of water is produced. What is the percentage yield of H₂O?



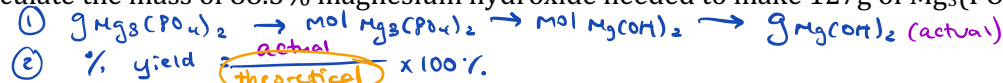
11. Consider the reaction of magnesium hydroxide with phosphoric acid:



a) Calculate the mass of magnesium phosphate that will be formed from the reaction of 15.0g of 92.5% magnesium hydroxide with an excess of phosphoric acid.



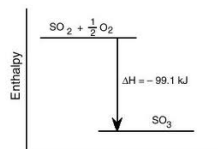
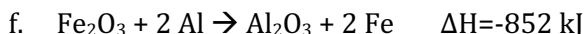
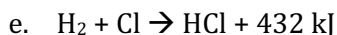
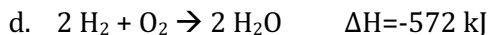
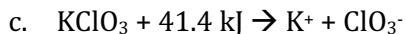
b) Calculate the mass of 88.5% magnesium hydroxide needed to make 127g of Mg₃(PO₄)₂.



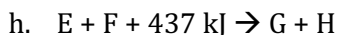
c) Calculate the percent purity of a sample of Mg(OH)₂ if 2.568g of the sample reacts with 38.45 mL of pure 0.6695M H₃PO₄.



12. State whether the following are endothermic or exothermic reactions:



g.



Answer Key

1.
 - a. Sodium bromide
 - b. Silver iodide
 - c. Mercury (I) bicarbonate
 - d. Copper (II) sulphate
 - e. Nitrogen dioxide
2.
 - a. NO
 - b. NaNO₂
 - c. CaS
 - d. Mg(CH₃COO)₂
 - e. OF₂
3.
 - a. Synthesis: 1, 1, 2
 - b. Single replacement: 1, 1, 1, 2
 - c. Synthesis: 2, 1, 2
 - d. Single replacement: 2, 2, 2, 1
 - e. Neutralization: 2, 1, 1, 2
4.
 - a. $2 \text{NH}_3 \rightarrow \text{N}_2 + 3 \text{H}_2$
 - b. $\text{FeSO}_4 + \text{MnI}_2 \rightarrow \text{FeI}_2 + \text{MnSO}_4$
 - c. $\text{NaOH} + \text{HClO}_4 \rightarrow \text{H}_2\text{O} + \text{NaClO}_4$
 - d. $3 \text{Cl}_2 + 2 \text{AlBr}_3 \rightarrow 2 \text{AlCl}_3 + 3 \text{Br}_2$
 - e. $\text{H}_2\text{S} + \text{Ca(OH)}_2 \rightarrow 2 \text{H}_2\text{O} + \text{CaS}$
 - f. $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2 \text{NaCl}$
5.
 - a. 1.34 g H₂
 - b. 21.8 g Cu
6. 1.414 x 10²⁴ atoms K 1.414 x 10²⁴ atoms Cl₂
7.
 - a. 0.090 mol NaCl
 - b. 0.644 L NaOCl
8.
 - a. 21.7 g CS₂
 - b. 1.4 g C
9.
 - a. $\text{Zn} + 2 \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
 - b. 3.30 g impure Zn
10. 34.2 % H₂O
11.
 - a. 20.9 g Mg₃(PO₄)₂
 - b. 95.5 g Mg(OH)₂
 - c. 87.66% pure Mg(OH)₂
12.
 - a. Exothermic
 - b. Exothermic
 - c. Endothermic
 - d. Exothermic
 - e. Exothermic
 - f. Exothermic
 - g. Exothermic
 - h. Endothermic