

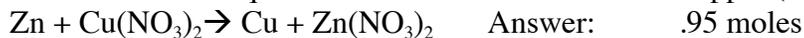
Stoichiometry Problems for Fun and POINTS

Name _____

Key facts for this problem set. One mole is equal to the gram formula mass (molar mass) or for a gas, one mole is equal to 22.4 liters.

Mole-Mole

1. How many moles of zinc would be required to react with 0.95 moles of copper (II) nitrate?



2. If you want to produce 25.0 moles of water from the combustion of propane, how many moles of oxygen will need to react?



3. The reaction of sodium phosphate with barium chloride produced 0.56 moles of barium phosphate. How many moles of sodium chloride were also produced?



Answer: 3.36 moles

Mass-Mass

- 4.) 10.0 grams of heptane (C_7H_{16}) react with oxygen according to the following equation. How many grams of water are formed?



- 5.) Use the equation from problem 4. If you make 35.0 grams of water how many grams of oxygen did you use?

Answer: 85.6 grams

6.) The reaction of sodium phosphate with iron (III) chloride produces 325.0 grams of iron (III) phosphate. How many grams of iron (III) chloride were reacted?

Answer: 347.5 grams

7. Use equation 6 to answer the following question. If you have 125 gram of iron (III) chloride how much salt could you make?

Answer: 135 grams

Gas Stoichiometry

8.) If 3.0 liters of N_2 is combined with 8.0 liters of H_2 at STP, according to the equation below, how many liters of NH_3 will be produced? Note: The equation needs to be balanced. $N_2 + H_2 \rightarrow NH_3$

Answer: 5.33 liters

Mixed Stoichiometry (mixed phases)

9.) The decomposition reaction for hydrogen peroxide is given below.



How many grams of hydrogen peroxide must be decomposed to produce 5.5 liters of oxygen gas at STP?

Answer: 16.7 grams

10.) Zinc reacts with hydrochloric acid (HCl) to form aqueous zinc chloride and hydrogen gas.

Answer: 4.7 liters

If there are 15.3 grams of HCl available to react at STP, how many liters of hydrogen gas would be produced from this reaction?