**Chemistry**: Mixed Stoichiometry Problems Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Directions: Solve each of the following problems. Show your work, including proper units, to earn full credit.

1. \_\_\_ CaCl2 + \_\_\_ AgNO3 → \_\_\_ Ca(NO3)2 + \_\_\_ AgCl

How many grams of silver chloride are produced when 45 g of calcium chloride react with excess silver nitrate?

1. \_\_\_ CuO + \_\_\_ H2 → \_\_\_ Cu + \_\_\_ H2O

At STP, how many liters of hydrogen are needed to react with 88 g of copper (II) oxide?

1. \_\_\_ Na + \_\_\_ H2O → \_\_\_ NaOH + \_\_\_ H2

If 3 liters of hydrogen (at STP) are produced in the above reaction, what mass of sodium was used?

1. \_\_\_ CH4 + \_\_\_ O2 → \_\_\_ CO2 + \_\_\_ H2O

What volume of methane is needed to completely react with 500 liters of oxygen?

1. \_\_\_ CS2 + \_\_\_ O2 → \_\_\_ CO2 + \_\_\_ SO2

How many molecules of carbon disulfide will react with 4.21 x 1019 molecules of oxygen at STP?

1. \_\_\_ C2H6 → \_\_\_ C2H4 + \_\_\_ H2

If 5.76 x 1028 molecules of ethane are broken down, what volume of hydrogen gas is produces at STP?

1. \_\_\_ Fe + \_\_\_ H2O → \_\_\_ Fe3O4 + \_\_\_ H2

If 67.8 L of hydrogen are produced at STP, how many atoms of iron were used in the reaction?

1. \_\_\_ KClO3 → \_\_\_ KCl + \_\_\_ O2

If 8.65 x 1025 molecules of potassium chloride are produced, what mass of oxygen is produced?

1. \_\_\_ NaI + \_\_\_ Cl2 → \_\_\_ NaCl + \_\_\_ I2

How many molecules of iodine are liberated if 546 g of chlorine react with excess sodium iodide?

1. \_\_\_ Cu + \_\_\_ AgNO3 → \_\_\_ Cu(NO3)2 + \_\_\_ Ag

How many grams of silver will be produced if 86 g of copper are used?

1. \_\_\_ (NH4)2SO4 + \_\_\_ Ca(OH)2 → \_\_\_ CaSO4 + \_\_\_ NH3 + \_\_\_ H2O

At STP, how many L’s of ammonia are produced by using 26.0 g of calcium hydroxide?

1. \_\_\_ NaCl + \_\_\_ H2SO4 → \_\_\_ HCl + \_\_\_ Na2SO4

If 359 g of sodium chloride are consumed in the reaction, how many molecules of sodium sulfate are produced?

1. \_\_\_ AgCH3COO + \_\_\_ Na3PO4 → \_\_\_ Ag3PO4 + \_\_\_ NaCH3COO

What mass of AgCH3COO will react with 4.77 x 1026 molecules of sodium phosphate?

1. \_\_\_ HgO → \_\_\_ Hg + \_\_\_ O2

What mass of mercury (II) oxide is required to produce 812 liters of oxygen (at STP)?

**Answers**:

1. 120 g AgCl
2. 25 L H2
3. 6 g Na
4. 300 L CH4
5. 1.40 x 1019 molecules CS2
6. 2.14 x 106 L H2
7. 1.37 x 1024 atoms Fe
8. 6.90x103 g O2
9. 4.63 x 1024 molecules I2
10. 290 g Ag
11. 15.7 L’s NH3
12. 1.85 x 1024 molecules
13. 3.97 x 105 g AgCH3COO
14. 1.57 x 104 g HgO