

Stoichiometry Review

Name: _____

Directions: Write the balanced equation for each reaction and show all steps in your solution.
Remember to include units in your work.

1) When copper wire is placed in a solution of silver (I) nitrate, a single replacement reaction occurs, producing copper (II) nitrate and solid silver.

Equation:

a) How many atoms of copper can replace 3.45 g of silver?

b) What mass of copper (II) nitrate is produced if 0.004 kg of silver is produced?

2) Zinc (II) acetate and sodium phosphate undergo a double replacement reaction.

Equation:

a) How many molecules of sodium phosphate are used up forming 7.93×10^{20} molecules of zinc phosphate?

b) What mass of zinc acetate is needed to produce 300 g of sodium acetate?

3) As carbon dioxide gas is bubbled through water, carbonic acid (H_2CO_3) is produced.

Equation:

a) What volume of carbon dioxide gas must be bubbled through water to produce 1.78 g of carbonic acid?

b) 9.21×10^{22} molecules of carbonic acid are produced. How many molecules of water were used?

4) When silver nitrate mixes with calcium chloride, a white precipitate of silver chloride forms along with a solution of calcium nitrate.

Equation:

a) How many grams of calcium nitrate would be produced from mixing 11.36 grams of silver nitrate with 4.59 grams of calcium chloride?

b) If 4.65 g of calcium nitrate is produced by performing this experiment in lab, what is the percent yield for the lab?

5) A student mixes 30.0 g of copper with 12.5 L of chlorine gas making copper (II) chloride. How many grams of copper (II) chloride will be made?

Answers:

- | | | |
|------------------------------------------------------|-------------------------------------------|----------------------------|
| 1a) 9.62×10^{21} atoms Cu | 1b) 3.44 g copper nitrate | |
| 2a) 1.59×10^{21} molecules sodium phosphate | 2b) 334.7 g zinc acetate | |
| 3a) 0.64 L carbon dioxide | 3b) 9.21×10^{22} molecules water | 4a) 5.45 g calcium nitrate |
| 4b) 85.3% yield | 5) 63.5 g copper (II) chloride | |