

NAME \_\_\_\_\_ HONORS CHEMISTRY  
MOLES / STOICHIOMETRY TEST

1) Explain why 1 mole of Carbon-12 atoms has a mass which is approximately 12 times larger than 1 mole of hydrogen atoms. (Please use Avogadro's number in your answer)

2) You are given a 7.80 gram sample of lead (IV) phosphate. How many grams of oxygen are present in the sample?

3) Naturally occurring hydrated copper (II) chloride is called eriochalcite. When a 0.235 grams sample of this hydrated salt is heated, the compound is dehydrated, and the mass of the remaining solid is 0.185 grams. What is the formula of the hydrated copper (II) chloride?

4) Vitamin C, also known as ascorbic acid, is composed of carbon, hydrogen, and oxygen. Determine the **empirical formula and molecular formula** of vitamin C using the following information. In an experiment, 400. mg of vitamin C is reacted with oxygen, and produces 600. mg of carbon dioxide and 163 mg of water. In a separate experiment it is determined that the molar mass of ascorbic acid is approximately 176 g/mol.

5) What mass of water would be produced from the decomposition of 126 grams of hypochlorous acid?

6) A 5.00 gram sample of iron (III) hydroxide is decomposed in the laboratory. The lab technician collects 1.10 grams of water. Determine the lab technician's percent yield for the process.

7a) What mass of salt would be produced when 0.900 L of 6.00M hydrochloric acid reacts with 160.0 grams of aluminum hydroxide.

7b) What “amount” of excess reactant remains unreacted after the reaction is complete (i.e. your answer will either be “g aluminum hydroxide” or “mL of hydrochloric acid”)?

8) Consider the following reaction

Zinc + sulfuric acid yields zinc sulfate + sulfur dioxide + water

10.0 grams of zinc are allowed to react with 165 mL of 2.00 M sulfuric acid.

8a) How many liters of sulfur dioxide gas would form?

8b) Calculate the “amount” of excess reactant which would remain after the reaction is complete (i.e. your answer will either be “g Zinc” or “mL of sulfuric acid”)?