

Chem!stry

Name: ()

Class:

Date: / /

Mole – Mass Calculations

Question One:

- Write a balanced chemical equation - including state symbols - for the reaction between magnesium and oxygen, forming magnesium oxide as the reaction product.
- Calculate the mass (in grams) of magnesium oxide that is produced when 18.0 g of magnesium burns completely in oxygen.

Question Two:

- Write a balanced chemical equation - including state symbols - for the thermal decomposition of magnesium carbonate, forming magnesium oxide and carbon dioxide as the reaction products.
- Calculate the mass (in grams) of magnesium carbonate that will undergo thermal decomposition to produce 8.0 g of magnesium oxide.

Question Three:

- Write a balanced chemical equation - including state symbols - for the reaction between calcium and water, forming calcium hydroxide and hydrogen as the reaction products.
- Calculate the mass (in grams) of calcium hydroxide that is produced when 2.0 g of calcium reacts with an excess of water.

Question Four:

- Write a balanced chemical equation - including state symbols - for the reaction between copper(II) oxide and sulphuric acid, forming copper(II) sulphate and water as the reaction products.
- 15.9 g of copper(II) oxide were reacted with 0.3 mol of sulphuric acid. What is the limiting reagent for this reaction? Calculate the mass (in grams) of copper(II) sulphate that is produced by this reaction.

Question Five:

- Write a balanced chemical equation - including state symbols - for the reaction between aluminium and oxygen, forming aluminium oxide as the reaction product.
- Calculate the mass (in grams) of aluminium oxide that is produced when 9.0 g of aluminium burns completely in oxygen.

Question Six:

- a) Write a balanced chemical equation - including state symbols - for the thermal decomposition of lead(II) nitrate, forming lead(II) oxide, nitrogen(IV) oxide and oxygen as the reaction products.
- b) Calculate the mass (in grams) of lead(II) oxide that is produced when 110.3 g of lead(II) nitrate undergoes complete thermal decomposition.

Question Seven:

A Group II metal carbonate undergoes thermal decomposition according to the following balanced chemical equation:



49.25 g of the Group II metal carbonate produces 11.0 g of carbon dioxide gas. Use this information to identify the Group II metal.

Question Eight:

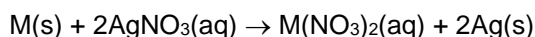
- a) Write a balanced chemical equation - including state symbols - for the reaction between iron(III) oxide and carbon monoxide, forming iron and carbon dioxide as the reaction products.
- b) 8.0 g of iron(III) oxide were reacted with 5.6 g of carbon monoxide. What is the limiting reagent for this reaction? Calculate the mass (in grams) of iron produced by this reaction.

Question Nine:

- a) An organic compound, **X**, is found to be composed of 80.0% carbon and 20.0% hydrogen. The same compound is known to have a relative molecular mass of 30.0. Calculate the true molecular formula of the compound.
- b) Organic compound **X** burns completely in air to form carbon dioxide and water. Write a balanced chemical equation for this reaction.
- c) Calculate the mass (in grams) of carbon dioxide that is formed when 6.0 g of organic compound **X** completely burns in air.

Question Ten:

An unknown transition metal reacts with an aqueous solution of silver nitrate according to the following balanced chemical equation:



6.5 g of the unknown transition metal were found to produce 21.6 g of silver. Identify the unknown transition metal.

- Scan the QR code below for the answers to this assignment.



http://www.chemist.sg/mole/mole_mass_calc_ans.pdf