Name : _____ Date : _____

• STOICHIOMETRIC CALCULATION •

1. How many moles of lithium chloride will be formed by the reaction of chlorine with 0.046 mol of lithium bromide in the following reaction?

$$2\ LiBr\ (aq) + Cl_2\ (g) \rightarrow 2\ LiCl\ (aq) + Br_2\ (g)$$

2. Hydrogen peroxide breaks down, releasing oxygen, in the following reaction:

$$2\ H_2O_2(aq) \rightarrow 2\ H_2O\ (l) + O_2\ (g)$$

a. What mass of oxygen is produced when 1.840 mol of H_2O_2 decomposes?

b. What mass of water is produced when this reaction produces 5 mol of O_2?

3. Calculate the mass of silver bromide produced from 22.5 g of silver nitrate in the following reaction:

$$2\ AgNO_3\ (aq) + MgBr_2\ (aq) \rightarrow 2\ AgBr\ (s) + Mg(NO_3)_2\ (aq)$$

4. Potassium chlorate is sometimes decomposed in the laboratory to generate oxygen. The reaction is:

$$2\ KClO_3\ (s) \rightarrow 2\ KCl\ (s) + 3\ O_2\ (g)$$

What mass of $KClO_3$ do you need to produce 0.5 mol of O_2?

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• Stoichiometric Calculation •

Answers

1. How many moles of lithium chloride will be formed by the reaction of chlorine with 0.046 mol of lithium bromide in the following reaction?

$$2\ LiBr\ (aq) + Cl_2\ (g) \rightarrow 2\ LiCl\ (aq) + Br_2\ (g)$$

4 mol H_2 x (2 mol Na/1 mol H_2) = 8 mol Na

2. Hydrogen peroxide breaks down, releasing oxygen, in the following reaction:

$$2\ H_2O_2(aq) \rightarrow 2\ H_2O\ (l) + O_2\ (g)$$

a. What mass of oxygen is produced when 1.840 mol of H_2O_2 decomposes?

1.840 mol H_2O_2 x (1 mol O_2/2 mol H_2O_2) x (32 g O_2/1 mol O_2) = 29.44 g O_2

b. What mass of water is produced when this reaction produces 5 mol of O_2?

5 mol O_2 x (2 mol H_2O/ 1 mol O_2) x (18 g H_2O/ 1 mol H_2O) = 180 g H_2O

3. Calculate the mass of silver bromide produced from 22.5 g of silver nitrate in the following reaction:

$$2\ AgNO_3\ (aq) + MgBr_2\ (aq) \rightarrow 2\ AgBr\ (s) + Mg(NO_3)_2\ (aq)$$

22 g $AgNO_3$ x (1 mol $AgNO_3$/170 g $AgNO_3$) x (2 mol AgBr/2 mol $AgNO_3$) x (188 g AgBr/1 mol AgBr) = 24.3 g AgBr

4. Potassium chlorate is sometimes decomposed in the laboratory to generate oxygen. The reaction is:

$$2\ KClO_3\ (s) \rightarrow 2\ KCl\ (s) + 3\ O_2\ (g)$$

What mass of $KClO_3$ do you need to produce 0.5 mol of O_2?

0.5 mol O_2 x (2 mol $KClO_3$/3 mol O_2) x (122.5 g $KClO_3$/ 1 mol $KClO_3$) = 40.8 g $KClO_2$