Name: _____ Section: _____

Workshop 10 – Stoichiometry I

Show calculation setups and answers for all problems below.

1. Ammonia gas will react with oxygen gas to yield nitrogen monoxide gas and water vapor.

   (a) Write the balanced chemical equation for this reaction.

   (b) How many moles of ammonia will react with 6.73 g of oxygen?

   _____

   (c) If 6.42 g of water is produced, how many grams of oxygen gas reacted?

   _____

   (d) If the reaction uses up 9.43×10^5 g of ammonia, how many kilograms of nitrogen monoxide will be formed?

   _____

   (e) When 2.51 g of ammonia react with 3.76 g of oxygen, 2.27 g of water vapor are produced. What is the percentage yield of water?

   _____

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2. Use the balanced equation below to solve the following problems:

$$2\ KMnO_4 + 16\ HCl \rightarrow 5\ Cl_2 + 2\ KCl + 2\ MnCl_2 + 8\ H_2O$$

(a) How many moles of HCl are required to react with 28 g of $KMnO_4$?

_____

(b) How many Cl_2 molecules will be produced using 1.5 mol $KMnO_4$?

_____

(c) To produce 29.0 g of $MnCl_2$, what mass (in g) of HCl will need to react?

_____

(d) How many moles of water will be produced when 5.0 mol of $KMnO_4$ are consumed?

_____

(e) What is the maximum mass of Cl_2 that can be produced by reacting 65.9 g of $KMnO_4$ with 18.0 g of HCl?

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