Worksheet: Mole/Mass Problems **Name**_____

Answer each of the following questions using the equation provided. BE SURE TO BALANCE EACH EQUATION BEFORE SOLVING ANY PROBLEMS. SHOW ALL WORK.

1. In a reaction between the elements aluminum and chlorine, aluminum chloride is produced.

$$\_\_\_Al + \_\_\_Cl_2 \rightarrow \_\_\_AlCl_3$$

a. 2 moles of Al will react with _____ mole(s) of Cl_2 to produce _____ mole(s) of $AlCl_3$.

b. How many grams of $AlCl_3$ will be produced if 2.50 moles of Al react?

c. How many moles of Cl_2 must react to produce 12.3 g of $AlCl_3$?

d. How many grams of aluminum will react with 3.4 moles of chlorine?

e. If 17 grams of aluminum react, how many moles of aluminum chloride will be produced?

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2. The ammonia (NH_3) used to make fertilizers for lawns and gardens is made by reacting nitrogen and hydrogen according to the following reaction.

$$\_\_\_N_2 + \_\_\_H_2 \rightarrow \_\_\_NH_3$$

   a. Determine the mass in grams of NH_3 formed from 1.34 moles of nitrogen.

   b. What is the mass in grams of hydrogen required to react with 1.34 moles of nitrogen?

   c. How many moles of nitrogen are required to produce 11.7 moles of NH_3?

   d. How many moles of nitrogen are required to produce 11.7 grams of NH_3?

   e. How many grams of hydrogen are required to form 3.5 moles of NH_3?

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