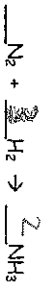


3) Mass - Mass

Worksheet: Mass/Mass Problems

Name KEY

1. Nitrogen and hydrogen react to form ammonia gas according to the following equation.



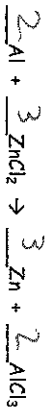
a. If 56.0 grams of nitrogen are used up by the reaction, how many grams of ammonia will be produced?

56.0 g N ₂	1 mol N ₂	2 mol NH ₃	17 g NH ₃	= 78.9 g NH ₃
	28 g N ₂	1 mol N ₂	1 mol NH ₃	

b. How many grams of hydrogen must react if the reaction needs to produce 63.5 grams of ammonia?

63.5 g NH ₃	1 mol NH ₃	3 mol H ₂	2.9 H ₂	= 11.29 g H ₂
	17 g NH ₃	2 mol NH ₃	1 mol H ₂	

2. Aluminum metal reacts with zinc chloride to produce zinc metal and aluminum chloride.



a. A mass of 45.0 grams of aluminum will react with how many grams of zinc chloride?

45 g Al	1 mol Al	3 mol ZnCl ₂	136.29 g ZnCl ₂	= 681.45 g ZnCl ₂
	27 g Al	2 mol Al	1 mol ZnCl ₂	

b. What mass of aluminum chloride will be produced if 22.6 grams of zinc chloride are used up in the reaction?

22.6 g ZnCl ₂	1 mol ZnCl ₂	2 mol Al	27 g Al	= 2.98 g Al
	136.29 g ZnCl ₂	3 mol ZnCl ₂	1 mol Al	

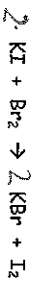
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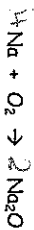
= 2.98 g Al

3. For the reaction whose equation is as follows, find the number of grams of I₂ that will be formed when 300.0 g of bromine react.



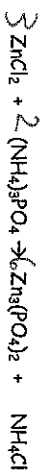
300 g Br ₂	1 mol Br ₂	1 mol I ₂	254 g I ₂	= 416.25 g I ₂
	160 g Br ₂	1 mol Br ₂	1 mol I ₂	

4. For the reaction whose equation is as follows, find the number of grams of sodium that must react to produce 42.0 grams of sodium oxide.



42.0 g Na ₂ O	1 mol Na ₂ O	2 mol Na	23 g Na	= 31.16 g Na
	62 g Na ₂ O	1 mol Na ₂ O	1 mol Na	

5. For the reaction whose equation is as follows, find how many grams of zinc phosphate will be produced by the reaction of 5.00 grams of ammonium phosphate.



5 g (NH ₄) ₃ PO ₄	1 mol (NH ₄) ₃ PO ₄	3 mol Zn ₃ (PO ₄) ₂	339.9 g Zn ₃ (PO ₄) ₂	= 16.13 g Zn ₃ (PO ₄) ₂
	158 g (NH ₄) ₃ PO ₄	1 mol (NH ₄) ₃ PO ₄	1 mol Zn ₃ (PO ₄) ₂	

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