Investigation 10: Mass Relationships
Practice Set 7

Stoichiometry: Gram - Mole Relationships

Calculate the following problems to two decimal places and show all work.

1.   Aluminum reacts with hydrochloric acid to produce aluminum chloride and hydrogen gas
     as in: _____ Al + _____ HCl → _____ $AlCl_3$ + _____ H_2 (a) Balance the equation. (b)
     How many moles of aluminum chloride would be produced by 22.14 grams of hydrogen
     chloride?   (c) How many moles of hydrogen would be produced by 243.00 grams of
     aluminum?

2.   Barium bromide and hydrogen phosphate react to produce barium phosphate and
     hydrogen bromide as shown:
     _____ $BaBr_2$ + _____ H_3PO_4 → _____ $Ba_3(PO_4)_2$ + _____ HBr
     (a) Balance the equation. (b) How many moles of barium phosphate would be produced
     by 165.36 grams of barium bromide? (c) How many moles of hydrogen phosphate would
     be needed to produce 352.70 grams of hydrogen bromide?

3.	Potassium reacts violently with water to produce potassium hydroxide and hydrogen gas.
	(a) Write a balanced equation for the reaction. (b) How many moles of potassium hydroxide would be produced by 25.00 grams of potassium? (c) How many moles of water would be needed to produce 100.00 grams of hydrogen?

4.	Boron oxide and hydrogen fluoride react to produce boron fluoride and water.
	(a) Write a balanced equation for the reaction. (b) How many moles of boron oxide would be needed to produce 110.00 grams of boron fluoride? (c) How many moles of water would be produced by 409.21 grams of hydrogen fluoride?

5.	Lithium peroxide (Li_2O_2) and water react to produce lithium hydroxide and oxygen gas.
	(a) Write a balanced equation for the reaction. (b) How many moles of oxygen would be produced by 292.47 grams of lithium peroxide? (c) How many moles of water would be needed to produce 348.36 grams of lithium hydroxide?