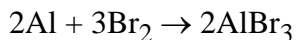# Limiting & Excess Reagents Worksheet

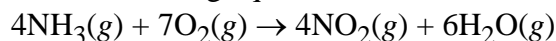1. An excess of Al and 6.0 mol of Br_2 are reacted according to the equation
   $2Al + 3Br_2 \rightarrow 2AlBr_3$
   How many moles of $AlBr_3$ will be formed assuming 100% yield?

   [A] 8.0 mol   [B] 6.0 mol   [C] 4.0 mol   [D] 2.0 mol   [E] 3.0 mol
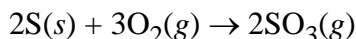
2. Refer to the following equation:
   $$4NH_3(g) + 7O_2(g) \rightarrow 4NO_2(g) + 6H_2O(g)$$
   In the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$, how many moles of ammonia would be produced from 1.0 mol of hydrogen and excess nitrogen?

   [A] 0.67 mol   [B] 2.0 mol   [C] 3.0 mol   [D] 1.3 mol   [E] 0.33 mol

3. For the reaction
   $2S(s) + 3O_2(g) \rightarrow 2SO_3(g)$
   if 6.3 g of S is reacted with 10.0 g of O_2, show by calculation which one will be the limiting reactant.

4. For the reaction
   $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$
   68.1 g solid $CaCO_3$ is mixed with 51.6 g HCl. What number of grams of CO_2 will be produced?

   [A] 29.9 g CO_2 [B] 59.8 g CO_2 [C] 15.0 g CO_2

   [D] 69.4 g CO_2 [E] 33.7 g CO_2

5. For the reaction
   $2Cl_2(g) + 4NaOH(aq) \rightarrow 3NaCl(aq) + NaClO_2(aq) + 2H_2O(l)$
   11.9 g Cl_2 is reacted with 12.0 g NaOH. Determine which is the limiting reactant.

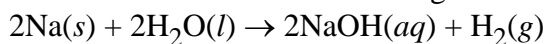6. Consider the reaction
   $Mg_2Si(s) + 4H_2O(l) \rightarrow 2Mg(OH)_2(aq) + SiH_4(g)$
   Which of the reactants is in excess if we start with 50.0 g of each reactant?
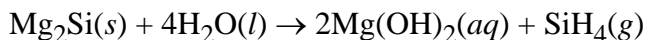
Limiting & Excess Reagents Worksheet

7. Sodium and water react according to the reaction
   $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$
   What number of moles of H_2 will be produced when 4 mol Na is added to 2 mol H_2O?

   [A] 2 mol   [B] 1 mol   [C] 4 mol   [D] 3 mol   [E] none of these

8. For the reaction of $C_2H_4(g)$ with $O_2(g)$ to form $CO_2(g)$ and $H_2O(g)$, what number of moles of CO_2 can be produced by the reaction of 5.00 mol C_2H_4 and 12.0 mol O_2?

   [A] 10.0 mol   [B] 4.00 mol   [C] 5.00 mol   [D] 8.00 mol   [E] none of these

9. In the reaction of $C_8H_{18}(l)$ with $O_2(g)$ to form $CO_2(g)$ and $H_2O(g)$, 2.28 g C_8H_{18} is reacted with 7.00 g of O_2. Determine which is the limiting reactant.

10. The limiting reactant in a reaction is

    [A] the reactant which has the lowest coefficient in a balanced equation

    [B] the reactant for which there is the fewest number of moles

    [C] the reactant for which there is the least amount in grams

    [D] the reactant for which there is the most amount in grams   [E] none of these

11. The limiting reactant is the reactant

    [A] that has the lowest coefficient in the balanced equation

    [B] for which you have the lowest mass in grams   [C] that has the lowest molar mass

    [D] that is left over after the reaction has gone to completion   [E] none of these