Worksheet: Stoichiometry III

Refer to the following equation:

$4NH_3(g) + 7O_2(g) \rightarrow 4NO_2(g) + 6H_2O(g)$

1. How many moles of ammonia will be required to produce 10.0 mol of water?

   [A] 5.00 mol [B] 4.00 mol [C] 6.67 mol [D] 10.0 mol [E] none of these

2. How many molecules of NO_2 are produced when 1 mol of ammonia is completely reacted?

   [A] 46 [B] 12.044×10^{23} [C] 4 [D] 6.022×10^{23} [E] none of these

3. How many molecules of water are produced for each mole of NO_2 given off?

   [A] 12.044×10^{23} [B] 9.033×10^{23} [C] 18

   [D] 6.022×10^{23} [E] none of these

4. 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] 0.33 mol [E] 1.3 mol

Refer to the following unbalanced equation:

$C_6H_{14} + O_2 \rightarrow CO_2 + H_2O$

5. When balanced in standard form (smallest whole numbers), the coefficient for CO_2 is

   [A] 8 [B] 6 [C] 14 [D] 10 [E] 12

6. What mass of oxygen (O_2) is required to react completely with 25.0 g of C_6H_{14}?

   [A] 608 g [B] 32.0 g [C] 88.2 g [D] 16.0 g [E] 9.28 g

7. What mass of carbon dioxide (CO_2) can be produced from 25.0 g of C_6H_{14} and excess oxygen?

   [A] 44.0 g [B] 76.6 g [C] 528 g [D] 264 g [E] 12.8 g

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8. How many molecules of carbon dioxide would be formed if 6.75 g of propane is burned in the following reaction?
   $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$

   [A] 5.54×10^{23} molecules [B] 2.77×10^{23} molecules [C] 1.39×10^{23} molecules

   [D] 20.3×10^{23} molecules [E] 3.89×10^{23} molecules

9. What mass of oxygen would be required to completely burn 6.75 g of propane in the following reaction?
   $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$

   [A] 49.0 g O_2 [B] 122 g O_2 [C] 77.4 g O_2 [D] 24.5 g O_2 [E] 33.8 g O_2

10. Calculate the moles of oxygen needed to react with 11.2 g of octane, C_8H_{18}, in the following reaction.
    $2C_8H_{18}(g) + 25O_2(g) \rightarrow 16CO_2(g) + 18H_2O(g)$

    [A] 1.23 mol O_2 [B] .615 mol O_2 [C] 2.46 mol O_2

    [D] 3.15 mol O_2 [E] 140. mol O_2

11. Calculate the mass of carbon dioxide produced from 11.2 g of octane, C_8H_{18}, in the following reaction.
    $2C_8H_{18}(g) + 25O_2(g) \rightarrow 16CO_2(g) + 18H_2O(g)$

    [A] 34.5 g CO_2 [B] 46.2 g CO_2 [C] 89.6 g CO_2

    [D] 17.3 g CO_2 [E] 58.9 g CO_2