**Skill 36.01 Problem 1**

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| The following mixture of gases is confined to a flexible container. A spark causes the mixture to react forming H2O. Assuming STP conditions and no resistance from the container,     1. What are the total moles of gases in the container after the reaction is complete? 2. What is the final volume? |
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**Skill 36.01 Problem 2**

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| Propane C3H8 completely combusts according to the following equation,  C3H8 + 5O2 🡪 3CO2 + 4H2O  What will be the volume of carbon dioxide produced in the reaction? |
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**Skill 36.02 Problem 1**

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| Methanol readily combusts as follows,  2CH3OH(g) + 3O2(g) 🡪 2CO2(g) + 4H2O(g)  If 5.0 L of methanol reaction, how much, in moles, of water vapor will be produced? |
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**Skill 36.03 Problem 1**

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| Sodium reacts with water through single replacement as follows,  2Na(s) + 2H2O(l) 🡪 2NaOH(s) + H2(g)  How much sodium is required to produce 500. L of hydrogen gas? |
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**Skill 36.04 Problem 1**

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| Sodium reacts with water through single replacement as follows,  2Na(s) + 2H2O(l) 🡪 2NaOH(s) + H2(g)  If 2.5 moles of sodium react, what volume of hydrogen gas will be produced? |
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**Skill 36.05 Problem 1**

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| Sodium reacts with water through single replacement as follows,  2Na(s) + 2H2O(l) 🡪 2NaOH(s) + H2(g)  If 2.0 g of sodium react, what volume of hydrogen gas will be produced? |
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| **Set 36.0 Summary** |

In the early stages of solving stoichiometry problems it is useful to know what steps to combine for a given type of problem. For this reason, I have provided figure 2. Keep in mind however, you will not be permitted to use this on quizzes or exams. Only through practice will you acquire independence from this guide.

**Figure 2**. How to solve gas stoichiometry problems

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| Type | Steps |
| volume-volume | volume given x = volume unknown |
| volume-moles | Use PV=nRT to find moles from volume  moles given x  = moles unknown |
| volume – mass | Use PV=nRT to find moles from volume  moles given x  x = mass unknown (g) |
| mole - volume | moles given x = moles unknown  use PV=nRT to find volume from moles |
| mass - volume | mass given x x = moles unknown  use PV=nRT to find volume from moles |