

Chemistry: Methane Problem

Methane is also known as natural gas and can go by the chemical name carbon tetrahydride. This is the gas that we use in our Bunsen burners (in the lab) and that most of you use to heat your homes with during the winter. You may also use this for your hot water heater, your stove/oven, or even in a fireplace.

- Use your knowledge from previous lessons to write the chemical equation for the reaction of carbon tetrahydride gas combining with oxygen gas to form a combustion reaction. Use your notes if necessary.

Stoichiometry Steps

1. Use coefficients to balance the equation you wrote above.
2. If you knew that you needed to produce 1.33 g of carbon dioxide in the above balanced equation, how many moles of carbon dioxide would this be? (Hint: use the periodic table to convert grams of carbon dioxide to moles.)
3. Use the moles of carbon dioxide you just got to change the coefficients in the balance equation. (Remember that these new coefficients represent moles.)
4. Use the new coefficients to determine the mass in grams of carbon tetrahydride that is needed and also the mass in grams of oxygen needed.

Mole Conversion

1. Convert the masses you got in step 4 into liters.

** Remember: $1 \text{ mole} = 6.02 \times 10^{23} \text{ atoms} = 22.4 \text{ L (gas)} = \text{gram atomic mass}$