

Name: _____
Blk: _____ Date: _____

Chemistry 11
STOICHIOMETRY Calculations Involving MOLES, MASS, GAS VOLUME
AND MOLECULES

The balanced equation gives rise to CONVERSION FACTORS that are sometimes referred to as the _____.

The mole bridge is the ratio which allows us to make connections between the MOLE DIAGRAM (that we learned in UNIT III) and the following DIAGRAM:

Example 1. For the reaction of tricarbon octahydride with oxygen:

a. What mass of CO_2 is produced by reacting 2.00 mol of O_2 (g)?

Step 1. Write out the balanced equation:

Step 2. Use the above diagram to identify the unknown, the initial and the conversion factors and solve:

b. What mass of C_3H_8 is required to produce 100.0 grams of H_2O ?

Step 1. Write out the balanced equation:

Step 2. Use the above diagram to identify the unknown, the initial and the conversion factors and solve:

c. If a sample of tricarbon octahydride is burned, what mass of H₂O (l) is produced if the reaction also produces 50.0 L of CO₂ at STP?

Step 1. Write out the balanced equation:

Step 2. Use the above diagram to identify the unknown, the initial and the conversion factors and solve:

d. A tricarbon octahydride burner is used in a laboratory as part of a chemistry demonstration. What volume of O₂ (g) at STP is consumed from the laboratory air when the burner produces 10.0 L of CO₂ (g) at STP during the demo?

Step 1. Write out the balanced equation:

Step 2. Use the above diagram to identify the unknown, the initial and the conversion factors and solve:

e. A sample of porous, gas-bearing rock is crushed and 1.35×10^{-6} grams of CH₄ (g) is extracted from the powdered rock. How many molecules of CO₂ (g) are produced if the gas sample is burned in the presence of O₂ (g)?

Step 1. Write out the balanced equation:

Step 2. Use the above diagram to identify the unknown, the initial and the conversion factors and solve: