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Put the first three letters of your LAST NAME in the boxes:

Full Name: Margyn Wernecke (A)

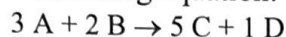
UTEID: mcw43226

Unit 1: Gases Discussion Worksheet #1, Stoichiometry and Pressure

Show all work for credit. Your work and answers must fit in the boxes or diagrams provided for each question.

Part I:

- 40.0 grams of A (60.0 g/mol) react with 35.0 grams of B (40.0 g/mol) to form C (37.0 g/mol) and D (75.0 g/mol) according to the following equation:



Which reactant is the limiting reactant? (Show the work used to make this determination in the box and then circle your answer.)

Handwritten work for limiting reactant determination:

$$\begin{array}{l} 40 \text{ g} \\ \div 60 \text{ g/mol} \\ \hline 0.67 \text{ mol A} \end{array} \times \frac{5}{3} = 1.11 \text{ mol C}$$

$$\begin{array}{l} 35 \text{ g B} \\ \div 40 \text{ g/mol} \\ \hline 0.875 \text{ mol B} \end{array} \times \frac{1}{2} = 0.4375 \text{ mol C}$$

Since 0.4375 mol C is less than 1.11 mol C, B is the limiting reactant.

The limiting reactant is (circle one): A B ~~C~~ ~~D~~

- For the reaction in #1, what is the maximum number of grams of D that can be produced? Again, show your work and put your final answer in the spaces in the lower right corner.

Handwritten work for maximum grams of D:

$$\begin{array}{l} 40 \text{ g A} \\ \div 60 \text{ g/mol} \\ \hline 0.67 \text{ mol A} \end{array} \times \frac{1 \text{ mol D}}{3 \text{ mol A}} = 0.223 \text{ mol D}$$

$$0.223 \text{ mol D} \times 75 \text{ g/mol} = 16.7 \text{ g D}$$

Answer: 16.7 g D

- For the reaction in #1, how many grams of excess reactant are left over at the completion of the reaction? Again, show your work and put your final answer in the spaces in the lower corner.

Handwritten work for excess reactant:

$$\begin{array}{l} 40 \text{ g A} \\ \div 60 \text{ g/mol} \\ \hline 0.67 \text{ mol A} \end{array} \times \frac{2 \text{ mol B}}{3 \text{ mol A}} = 0.447 \text{ mol B}$$

$$0.447 \text{ mol B} \times 40 \text{ g/mol} = 17.8 \text{ g B}$$

$$35 \text{ g} - 17.8 \text{ g} = 17.2 \text{ g}$$

Answer: 17.2 g of B