Topic Reminder Q1
Stoichiometric Calculations

25g of Methane (CH_4) reacts with 25 g of O_2 produces carbon dioxide and water at 1 atm and 25C.

Convert to moles

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

1. Create an ISE table and determine the moles of each reactant left after the reaction has ended.

$25g\ CH_4 \mid \frac{1mol}{16g} = 1.6mol\ CH_4$

$25g\ O_2 \mid \frac{1mol}{32g} = 0.78\ mol\ O_2$

	CH_4	O_2	CO_2	H_2O
I	1.6	0.78	0	0
S	-0.39	-0.78	+0.39	+0.78
E	1.2	0	0.39	0.78

2. Convert the moles of CO_2 to Liters at the given conditions.

$0.39mol\ CO_2 \mid \frac{22.4L}{1mol} = 8.7L\ CO_2$

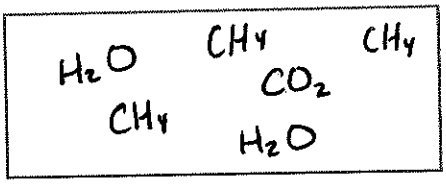
3. Convert the moles of water to mass.

$0.78mol\ H_2O \mid \frac{18g}{1mol} = 14g\ H_2O$

4. Convert the excess reactant to particles.

$1.2\ mol\ CH_4 \mid \frac{6.022E23}{1\ mol} = 7.2E23\ CH_4\ particles$

5. Draw a representational particulate drawing of the reaction after completion.



after completion, "E"

1.2 mol CH_4 → $0.4 \times 3 = 1.2$

0.4 mol CO_2 → $0.4 \times 1 = 0.4$

0.8 mol H_2O → $0.4 \times 2 = 0.8$

6. Draw a representational graph showing relative concentrations as reaction proceeds to the end.