Preliminary Quiz
Stoichiometric Ratios

Methanol burns in oxygen

$2CH_3OH + 3O_2 \rightarrow 2CO_2 + 4H_2O$

I	50	?		
S	-50	-75	50	100
E	0	?		

All Questions on this sheet MUST be answered with factor label work including units.

1. If a student has 50 Methanol molecules,
   a. How many O_2 molecules will she need?

$$\frac{50 \mid 3\ O_2}{2} = 75\ O_2 \text{ Needed}$$

   b. How many CO_2 molecules will she get?

$$\frac{50 \mid 2\ CO_2}{2} = 50\ CO_2 \text{ get}$$

   c. How many H_2O molecules will she get?

$$\frac{50 \mid 4\ H_2O}{2} = 100\ H_2O$$

   d. Using your data from the 3 previous questions,
      i. Fill out the ISE table above
      ii. What is the limiting reactant? CH_3OH

2. If she burned 2 moles of methanol in excess oxygen,
   a. How much mass of ethanol is this?

$CH_3OH = 32\ g/mol \times 2 = 64\ g$

   b. How many moles of water would be produced assuming excess oxygen?

$$\frac{64\ g \mid 1\ mol \mid 4\ H_2O}{32\ g \mid 2\ CH_3OH} = 4\ mol\ H_2O$$