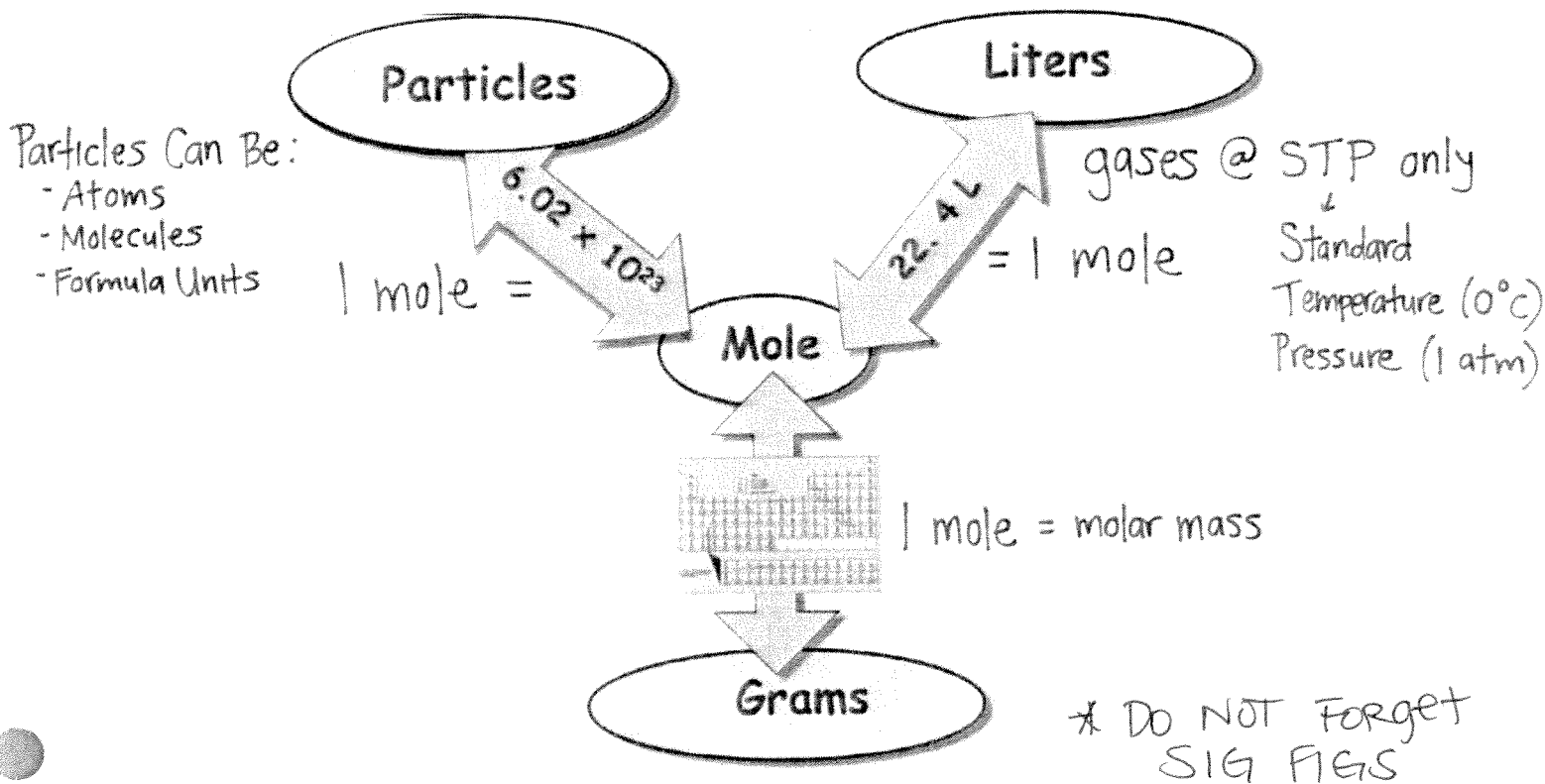


Mole Conversion Map

<http://newshamchem.weebly.com/the-mole.html>



1. What is the mass, in grams, of 2.50 moles of methane, CH_4 ?

$$\frac{2.50 \text{ moles } \text{CH}_4}{1 \text{ mole } \text{CH}_4} \times \frac{16.05 \text{ g } \text{CH}_4}{1 \text{ mole } \text{CH}_4} = 40.1 \text{ g } \text{CH}_4$$

3 sig Fig

2. How many moles of helium are in 16 grams of helium?

$$\frac{16 \text{ g He}}{4.00 \text{ g He}} \times \frac{1 \text{ mole He}}{1 \text{ mole He}} = 4.0 \text{ g He}$$

2 sig Fig

3. What is the volume, in liters, of 0.50 moles of ammonia, NH_3 ?

$$\frac{0.50 \text{ mole } \text{NH}_3}{1 \text{ mole } \text{NH}_3} \times \frac{22.4 \text{ L } \text{NH}_3}{1 \text{ mole } \text{NH}_3} = 11.2 \text{ L} = 11 \text{ L } \text{NH}_3$$

2 sig Fig

4. How many moles of propane, C_3H_8 , are in 67.2 liters of propane?

$$\frac{67.2 \text{ L } C_3H_8}{22.4 \text{ L } C_3H_8} \times \frac{1 \text{ mole } C_3H_8}{1 \text{ mole } C_3H_8} = 3.00 \text{ mole } C_3H_8$$

3 sig Fig

5. A sample of carbon contains 9×10^{23} atoms of carbon. How many moles of carbon are in the sample?

$$\frac{9 \times 10^{23} \text{ atoms C}}{6.02 \times 10^{23} \text{ atoms C}} \times \frac{1 \text{ mole C}}{1 \text{ mole C}} = 1.495 = 1. \text{ mole C}$$

1 sig Fig

6. How many molecules of ethane, C_2H_6 , are in 4 moles of ethane?

$$\frac{4 \text{ mole } C_2H_6}{1 \text{ mole } C_2H_6} \times \frac{6.02 \times 10^{23} \text{ molecules } C_2H_6}{1 \text{ mole } C_2H_6} = 2 \times 10^{24} \text{ molecules } C_2H_6$$

sig Fig

7. What is the mass, in grams, of 1.5×10^{23} molecules of methane, CH_4 ?

$$\frac{1.5 \times 10^{23} \text{ molecules } CH_4}{6.02 \times 10^{23} \text{ molecules } CH_4} \times \frac{16.05 \text{ g } CH_4}{1 \text{ mole } CH_4} = 3.999 = 4.0 \text{ g } CH_4$$

2 sig Fig

8. What volume, in liters, is occupied by 15 grams of ethane, C_2H_6 ?

$$\frac{15 \text{ g } C_2H_6}{30.08 \text{ g } C_2H_6} \times \frac{22.4 \text{ L } C_2H_6}{1 \text{ mole } C_2H_6} = 11 \text{ L } C_2H_6$$

2 sig Fig

ANSWERS:

1) 40.1 g CH_4

3) 11 L NH_3

5) 1 mol C

7) 4.0 g CH_4

2) 4.0 mol He

4) 3.00 L C_3H_8

6) 2×10^{24} molecules C_2H_6

8) 11 L C_2H_6