

## SCIENCE (CHEMISTRY)

### Chemical Calculations Using Mole (VII) - Calculating number of mole

Name: \_\_\_\_\_ ( ) Class: \_\_\_\_\_ Date: \_\_\_\_\_

#### Exercise

5. How many moles of molecules are there in

- (a) 45g of water;
- (b) 2.8g of methane;
- (c) 200g of calcium oxide;
- (d) 70g of sodium chloride;
- (e) 270g of ethane;
- (f) 54g of ammonia;
- (g) 20.7g of carbon dioxide;
- (h) 17.5g of sulphuric acid;
- (i) 128g of sulphur dioxide;
- (j) 320g of oxygen gas;
- (k) 40.5g of bromine liquid;
- (l) 2.8g of iron (III) fluoride;
- (m) 35.5g of nitrogen gas;
- (n) 12g of chlorine gas;
- (o) 50g of ethanol?

6) Calculate the mass of the following:

e.g. 2 mol of ethene, C<sub>2</sub>H<sub>4</sub>;

$$\text{relative molecular mass of C}_2\text{H}_4 = (12 \times 2) + (1 \times 4)$$

$$= 28 \text{ *}$$

Note: no unit

$$\text{mass of iron in grams} = \text{number of moles} \times M_r \text{ of iron in grams}$$

$$= 2 \times 28\text{g}$$

$$= 56\text{g}$$

a) 15 mol of carbon dioxide;

b) 0.5 mol water;

c) 450 mol of sodium chloride;

d) 3.0 mol of oxygen gas;

e) 65 mol of hydrochloric acid;

f) 250 mol of sulphur dioxide;

g) 18 mol of bromine liquid;

h) 50 mol of calcium carbonate;

i) 4.4 mol of ammonia;

j) 1.5 mol of ethanol;

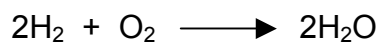
k) 2.5 mol of ethane;

l) 5 mol of methane;

m) 0.5 mol hydrogen gas?

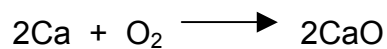
7) Calculate the following:

a) Hydrogen gas burns in oxygen gas to produce water.



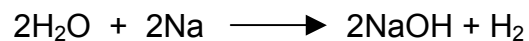
What mass of oxygen gas is needed to completely burn 25g of hydrogen?

b) Calcium burns in oxygen to form calcium oxide. The reaction is represented by the equation.



Find the mass of calcium oxide formed if 45g of calcium is burnt.

c) What is the mass of water used to react completely with 13.8g of sodium? The reaction is represented by the equation.

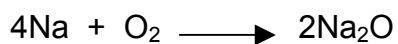


- d) Calcium hydroxide reacts with ammonium chloride according to the following equation.



Calculate the mass of ammonia gas produced when 45g of calcium hydroxide reacts completely with ammonium chloride.

- e) Sodium reacts with oxygen gas in the air to form sodium oxide as shown by the equation.



What mass of oxygen gas is needed to react with 30g of sodium?

- f) Potassium nitrate decomposes on heating according to the following equation:



If 50g of potassium nitrate is completely decomposed; calculate the mass of solid residue obtained.