# DEFINITIONS

4.7.1

Chemists use the concept of the mole to calculate the amounts of chemicals involved in a reaction.

**(a)** Define *mole*.

.....

[1]

**(a)** Avogadro's Number of particles
**or** formula mass in grams
**or** $6 \times 10^{23}$ particles accept atoms, ions and molecules
**or** as many particles as there are carbon atoms in 12.00g of $^{12}Ca$
ANY one **[1]**

4.7.2

**(a)** Definethefollowing

**(i)** the mole

.....

..... [1]

**(ii)** the Avogadro constant

.....

..... [1]

**(b)** Which **two** of the following contain the same number of molecules?
Show how you arrived at your answer.

2.0 g of methane, $CH_4$

8.0 g of oxygen, $O_2$

2.0 g of ozone, $O_3$

8.0 g of sulfur dioxide, $SO_2$

.....

.....

..... [2]

**(a)** **(i)** (the number of particles which is equal to the number of atoms in) 12 g of carbon 12
**or**
the mass in grams which contains the Avogadro's constant number of particles
**or**
Avogadro's constant **or** 6 to 6.023 × $10^{23}$ of atoms / ions / molecules / electrons / particles
**or**
(the amount of substance which has a mass equal to) its relative formula mass / relative atomic mass / relative molecular mass in grams
**or**
(the amount of substance which has a volume equal to) 24 $dm^3$ of a gas at RTP
[1]

**(ii)** (Avogadro's constant is the) number of particles / atoms / ions / molecules in one mole of a substance
**or**
the number of carbon atoms in 12 g of C(12).
**or**
the number of particles / molecules in 24 $dm^3$ of a gas at RTP
**or**
6 to 6.023 × $10^{23}$ (particles / atoms / ions / molecules / electrons) [1]

**(b)** $CH_4$ **and** $SO_2$ [1]

2/16 = 1/8 or 0.125 moles of $CH_4$ **AND** 8/64 = 1/8 or 0.125 moles of $SO_2$ [1]