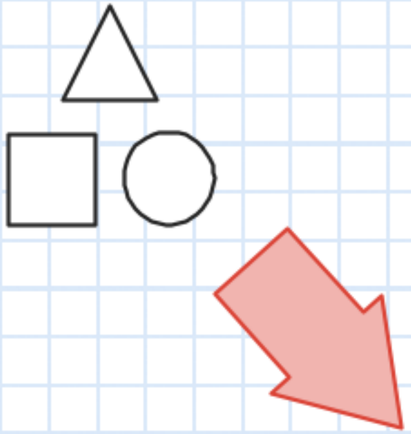
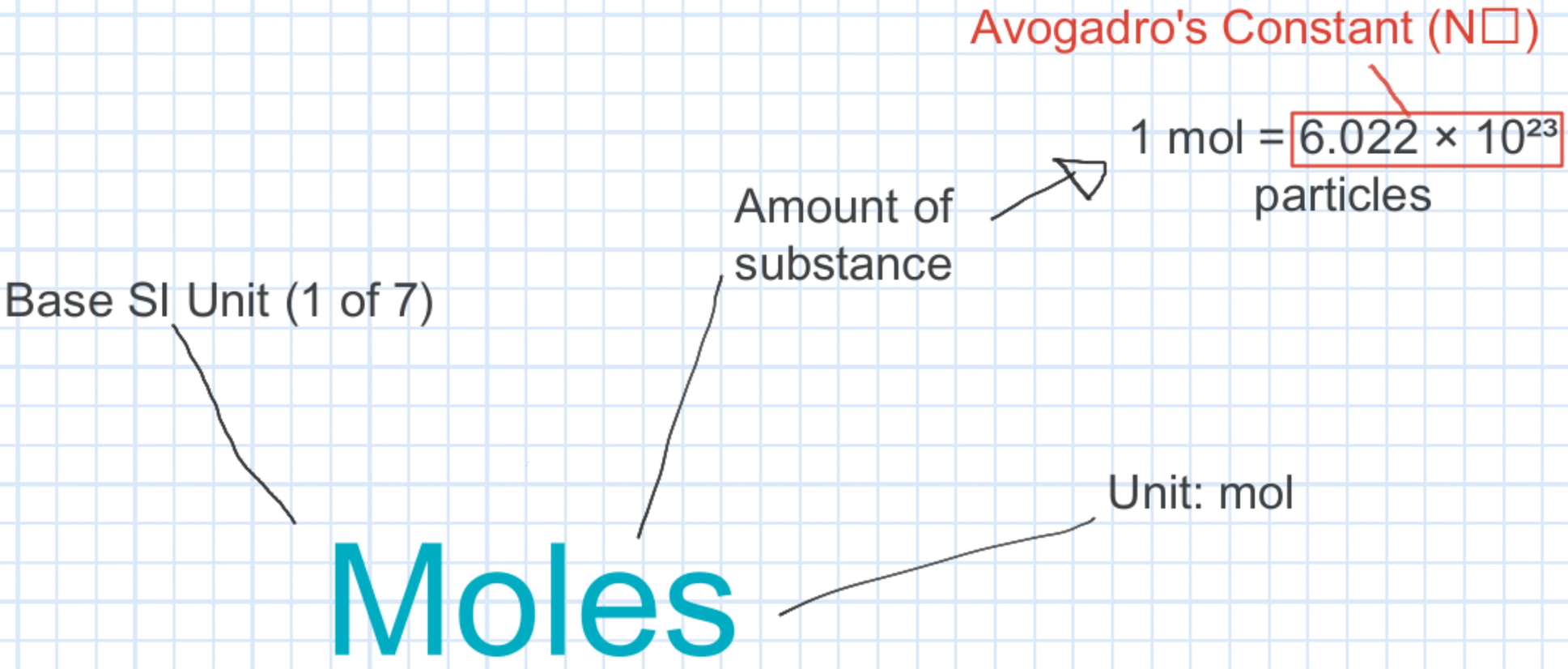
Welcome!

RA Session
21/03/2022

Chemistry



Recap


Avogadro's Constant (N□)
1 mol = 6.022 × 10²³ particles
Amount of substance
Base SI Unit (1 of 7)
Unit: mol
Moles

Relative Formula Mass (M□): All RAM's in a formula combined

Mass of an atom of an element compared to carbon-12

Relative Atomic Mass (A□)

Mass (in g) of one mol of a substance

Mass number (□) on PT

EQUATION MOLES

amount of substance

$$\text{number of moles} = \frac{\text{mass}}{A\square \text{ OR } M\square}$$

Worked Examples

ACRONYM
FIFA

Formula
Insert Values
Fine Tune
Answer

Calculate the number of oxygen atoms in 0.5 mol of oxygen molecules, O_2.

6.022×10^{23} atoms in a mol

$(3.011 \times 10^{23}) \times 2 = 6.022 \times 10^{23}$

Calculate the mass of 0.10 mol of iron.

A□ of iron = 56

FIFA

mol = mass / A□

0.1 = mass / 56

× 56 × 56

0.1 × 56 = mass

0.1 × 56 = 5.6 g

Calculate the amount of water molecules in 36 g of water.

FIFA

M☐ of water = 18

H_2O = 2 H, 1 O

A☐ of H = 1
M☐ of H_2 = 1 × 2 =2

A☐ of O = 16
M☐ of 1O = 16 × 1 = 16

M☐ of H_2O = 18

mol = m / M☐

2 = 36 / 18

2 mol

In the reaction shown by the equation below, what mass of nitrogen, N_2, is needed to make 120 g of nitrogen monoxide, NO?

M☐ of NO = 30 and M☐ of N_2 = 28

START with NO

FIFA

$$N_2(g) + O_2(g) \rightarrow 2NO(g)$$

mole ratio 1 : 1 : 2

mol = m / M☐

4 = 120 / 30

Scale up ratio = 1:1:2 = 2:2:4

2 = ? / 28

? = 2 × 28

56 = 2 × 28

56 g

GENERAL OUTLINE

How to answer reacting masses questions

1. Write the mole equation
2. Insert values for substance with two values (e.g. 12 g and 65 M□)
REMEMBER: You may have to find or calculate a relative mass
3. Calculate moles
4. Find mole ratio for equation
5. Adjust ratio to fit mole value
6. Insert values for answer into mole equation
7. Calculate answer
REMEMBER: Write units

Practice Questions

INFO QUESTIONS

Practice questions are available on the Online Quizzing System (OQS) under the title: Online RA Session #01 - Chemistry