

## Gases and Moles



## How did ideas about particles and gases develop?

**Amedeo Avogadro** was an Italian scientist who worked on particles and gases during the early 19<sup>th</sup> century.

Click "**start**" to find out more about his work and the work of other scientists in this field.



start



Avogadro's Law states that:

**Equal volumes of gases, at the same temperature and pressure, contain the same number of molecules.**

This means that one mole of any gas at a given temperature and pressure will always have the same volume.

At room temperature and pressure (RTP), one mole of any gas has a volume of **24 dm<sup>3</sup>** (24 liters).



What would happen to the volume of a mole of gas if you:

- increased the temperature?
- increased the pressure?



Match each volume of gas to the number of moles

24 dm<sup>3</sup> of oxygen

12 dm<sup>3</sup> of nitrogen

48 dm<sup>3</sup> of carbon dioxide

240 dm<sup>3</sup> of water vapour

2.4 dm<sup>3</sup> of hydrogen

36 dm<sup>3</sup> of helium

0.1 moles

0.5 moles

1.5 moles

2 moles

1 mole

10 moles



solve



# Gases and moles



Can you use the gas law to complete the statements?

1 mole of any gas =  $24 \text{ dm}^3$   
(at RTP)



1.  $12 \text{ dm}^3$  of oxygen gas contains   moles of oxygen molecules at RTP.
2. At room temperature and pressure, 2.5 moles of sulfur dioxide occupies    $\text{dm}^3$ .



solve

