

# amount of substance measurement **mol** mole



All nations on Earth have agreed to measure things using the International System of Units (SI).

**The mole** in this system is used to measure amount of substance.

The mole is used in chemistry, for example to make medicines, paints, plastics and metals.



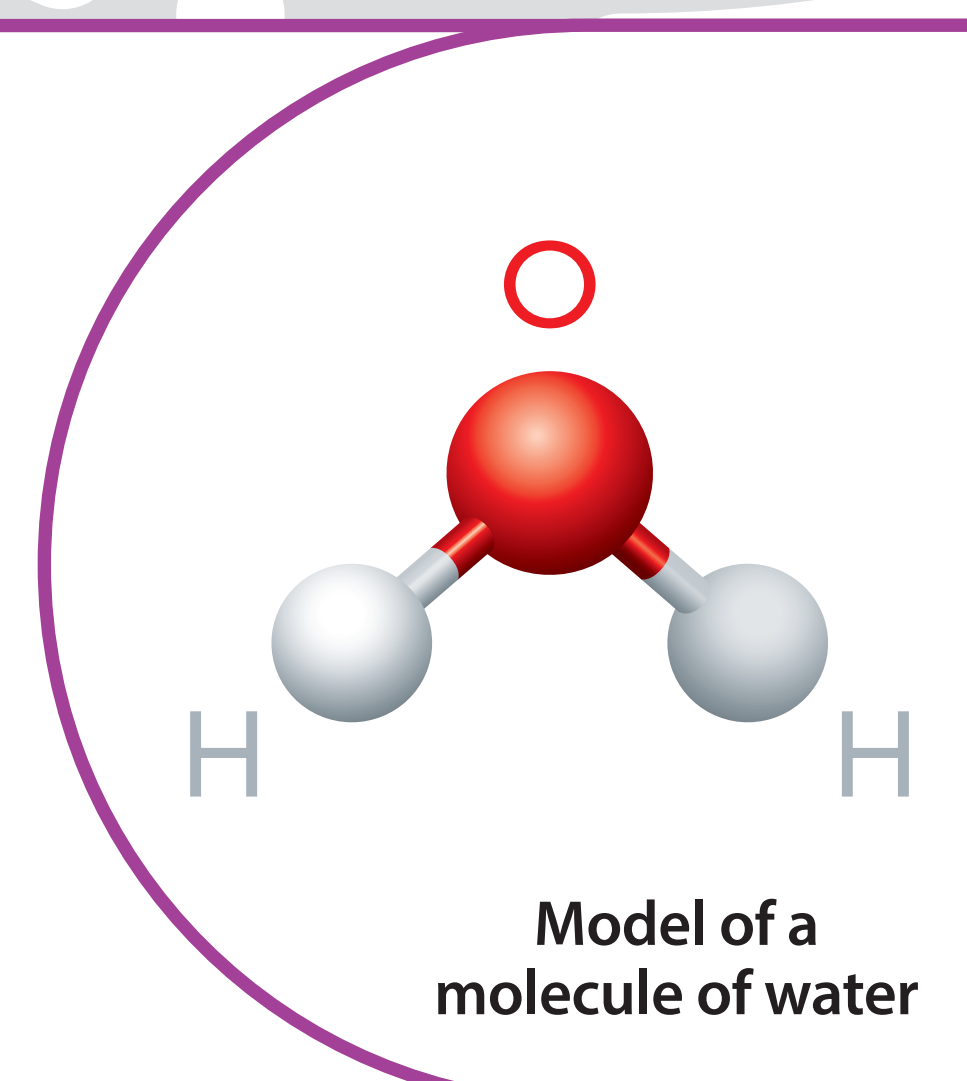
## What is a mole?

**An atom** is a tiny building block of matter. Everything is made of atoms.

**A molecule** is a group of joined atoms. For example (see the picture), water is a molecule with one oxygen atom joined to two hydrogen atoms.

If you have one mole of any particular atom or molecule, you have 602 214 076 000 000 000 000 of them. This huge number is called the 'Avogadro number'.

The amount of substance is a measure of the number of atoms and molecules in an object rather than how much they weigh or what volume they occupy.



## Uses

In a hydrogen-powered car, as shown here, hydrogen stored in the car reacts with oxygen in the air, making water and no nasty pollutants. As the atoms combine, they generate electrical power to run the car's motor.



## Challenge:

Guess how deep 602 214 076 000 000 000 000 grains of sand would cover the Earth's surface.

## Did you know?

Each of the seven billion people on Earth have about 40 trillion cells in their body. The total number of human cells on Earth is about half of the Avogadro number.

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Challenge answer: about 1 metre deep.