

# ATOMIC STRUCTURE

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## Atomic structure

An atom is made up of three types of **subatomic** particles; , and .

Particle	Mass	Charge

Diagram of an atom:

The of an atom is made up of protons and neutrons. Electrons are found circulating a nucleus in .

The mass of an atom is found in the nucleus of the atom.

**Q) What force of attraction keeps electrons circulating a nucleus?**

Electrostatic force of attraction is the force between a

charged particle and a charged particle.

e.g.

**Mass number (A):** The number of \_\_\_\_\_ and \_\_\_\_\_ in an atom.

**Atomic number (Z):** The number of \_\_\_\_\_ in an atom.

The atomic number defines the \_\_\_\_\_ of an element on the periodic table by counting the number of protons in the atom.

**Calculating number of protons, neutrons and electrons in an atom:**

24

**Mg**

12

An atom does not have a charge it is \_\_\_\_\_.

**Complete the number of subatomic particles for each atom:**

**An ion is a charged particle.**

**Q) How can an ion form?**

**Calculate the number of protons, neutrons and electrons:**

Notice the number of \_\_\_\_\_ never changes, the atom has changed to an ion but it still belongs to the same element.

e.g.

**Calculate the number of protons, neutrons and electrons:**

Notice only the number of changes for each isotope.

A fifty pence coin contains nickel alloyed with a metal **A**.

Nickel exists as a mixture of three isotopes, nickel-58, nickel-60 and nickel-62.

Complete the table below to show the atomic structures of the isotopes in metallic nickel.

isotope	protons	neutrons	electrons
nickel-58			
nickel-60			
nickel-62			

[Total 3 marks]

The Group 7 element bromine was discovered in 1826. Bromine gets its name from the Greek *brōmos* meaning stench because of its strong smell.

Bromine consists of a mixture of two isotopes,  $^{79}\text{Br}$  and  $^{81}\text{Br}$ .

- (i) What is the difference between the atomic structures of  $^{79}\text{Br}$  and  $^{81}\text{Br}$ ?

.....

.....

[2]

- (ii) State **two** similarities between the atomic structures of  $^{79}\text{Br}$  and  $^{81}\text{Br}$ .

.....

.....

[2]

[Total 4 marks]

Complete the following table:

Symbol	Protons	Neutrons	Electrons
$^{24}\text{Mg}$	12	12	
	12	12	10
	7		10
$\text{Al}^{3+}$			