CAIE Chemistry IGCSE

2.2 Atomic structure and the Periodic Table

Flashcards

Describe the structure of an atom

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The structure of the atom has a central nucleus containing neutrons and protons. It is surrounded by electrons arranged in shells.

Give the relative charges of a proton, neutron and electron

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	Relative charge
Proton	+1
Neutron	0
Electron	-1

Give the relative masses of a proton, neutron and electron

Give the relative masses of a proton, neutron and electron

	Relative mass
Proton	1
Neutron	1
Electron	~1/2000

Define atomic/proton number

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The atomic/proton number of an element is the number of protons in the nucleus of an atom

Define mass/nucleon number

Define mass/nucleon number

The mass/nucleon number of an element is the number of protons and neutrons in the nucleus of an atom

What does the electron configuration show?

What does the electron configuration show?

The electron configuration shows the arrangement of the electrons in each electron shell in an atom

State the maximum number of electrons in the first shell

State the maximum number of electrons in the first shell

2

State the maximum number of electrons in the second/third shell

State the maximum number of electrons in the second/third shell

8

Give the electron configuration for chlorine

Give the electron configuration for chlorine

- Chlorine has the atomic number 17 so it has 17 protons and so 17 electrons
- The electron configuration for chlorine is: 2, 8, 7

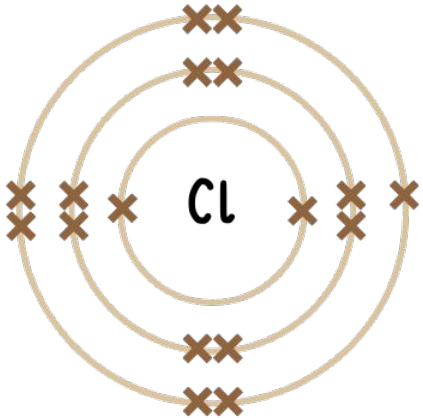
Give the electron configuration for nitrogen

Give the electron configuration for nitrogen

- Nitrogen has the atomic number 7 so it has 7 protons and so 7 electrons
- The electron configuration for nitrogen is: 2, 5

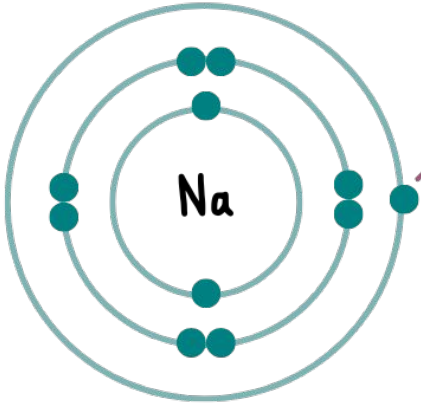
Draw the electron configuration for chlorine using a dot and cross diagram

Draw the electron configuration for chlorine using a dot and cross diagram



Draw the electron configuration for sodium using a dot and cross diagram

Draw the electron configuration for sodium using a dot and cross diagram



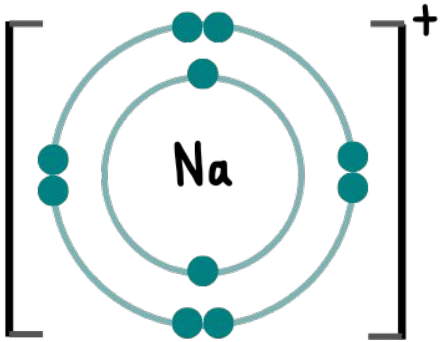
Give the electron configuration for a sodium ion, Na^+

Give the electron configuration for a sodium ion, Na^+

- Sodium has the atomic number 11 so it has 11 protons and so 11 electrons
- A sodium ion has lost an electron so has 10 electrons
- The electron configuration for a sodium ion is: 2, 8

Draw the electron configuration for a sodium ion Na^+ using a dot and cross diagram

Draw the electron configuration for a sodium ion Na^+ using a dot and cross diagram



Going across a row in the periodic table is known as a…

Going across a row in the periodic table is known as a…

Period

Going down a column in the periodic table is known as a…

Going down a column in the periodic table is known as a…

Group

What are the group 8 elements known as?

What are the group 8 elements known as?

The noble gases

What is unique about the electronic configuration of group 8 elements?

What is unique about the electronic configuration of group 8 elements?

The noble gases have full outer shell of electrons.
The electronic configuration of noble gases end in 8 or 2 (for helium).

Give the electron configuration for argon

Give the electron configuration for argon

- Argon has the atomic number 18 so it has 18 protons and so 18 electrons
- The electron configuration for argon is: 2, 8, 8
- The first, second and third electron shells are full

How does the group number of an element correspond to their electron configuration?

How does the group number of an element correspond to their electron configuration

For elements in groups 1-7 (I to VII), the number of electrons in the outermost shell is the same as their group number.

E.g. Oxygen is in group 6 and has 6 electrons in its outermost shell.

How does the period an element is in correspond to their electron configuration?

How does the period an element is in correspond to their electron configuration

The number of occupied electron shells is the same as the period number the element is in. E.g Potassium is in period number 4 and has 4 occupied electron shells.