

**YEAR 9**

Atomic Structure and the Periodic Table

Three sections. Answers in section A and C are short written answers; write in full sentences where the question asks you to explain.

Name: _____

Date: _____

Score: _____

A. Inside the atom

Protons and neutrons in the nucleus, electrons in shells around it.

1 Where in the atom are the protons and neutrons found?

2 What is the relative charge on a proton?

3 What is the relative charge on an electron?

4 What is the relative charge on a neutron?

5 Which particle has a relative mass so small it is treated as zero?

6 Explain why an atom has no overall charge.

7 What does the atomic number of an element tell you?

8 What does the mass number tell you?

B. Counting the particles

Protons = atomic number. Neutrons = mass number minus atomic number.

- 1 Sodium has atomic number 11 and mass number 23. Give its protons, neutrons and electrons.

- 2 Chlorine has atomic number 17 and mass number 35. Give its protons, neutrons and electrons.

- 3 Carbon has atomic number 6 and mass number 12. Give its protons, neutrons and electrons.

- 4 Oxygen has atomic number 8 and mass number 16. Give its protons, neutrons and electrons.

- 5 Magnesium has atomic number 12 and mass number 24. Give its protons, neutrons and electrons.

- 6 Potassium has atomic number 19 and mass number 39. Give its protons, neutrons and electrons.

- 7 An atom has 20 protons and 20 neutrons. What is its mass number?

- 8 Two atoms both have 6 protons. One has 6 neutrons and one has 8. What word describes them?

C. Reading the table

Across is a period, down is a group.

- 1 What does the group number tell you about a main-group element?

- 2 What does the period number tell you?

- 3 How many electrons fill the first shell?

- 4 How many electrons fill the second shell?

5 Write the electron arrangement of a sodium atom, which has 11 electrons.

6 Write the electron arrangement of a chlorine atom, which has 17 electrons.

7 What is the common name for the Group 1 elements?

8 What is the common name for the Group 7 elements?

9 Explain why the Group 0 elements are unreactive.