

Worksheet 1.1: Electronic Structure and Periodic Table Groups ChemistrySheets

Specification: GCSE Chemistry (AQA 5.1.1.4 & 5.1.2 / Edexcel SC3 & SC4)

Core Concepts: Electron shells, electron configuration, valence electrons, group number, period number, metallic/non-metallic properties, reactivity trends.

Section A: Key Terms & Concepts

1. Match the following scientific terms to their correct definitions. Write the letter of the definition next to the term.

Term	Definition
Electron shell _____	A. The outermost electrons of an atom.
Valence electron _____	B. A horizontal row in the Periodic Table.
Group _____	C. A vertical column in the Periodic Table.
Period _____	D. The number of protons in an atom's nucleus.
Atomic number _____	E. An energy level where electrons orbit the nucleus.

2. Complete the following sentences using the most appropriate scientific terms.

- a) Elements in the same _____ have the same number of _____.
- b) The _____ number of an element indicates the number of _____ it has.
- c) Atoms are most stable when their _____ is _____, typically containing eight electrons (or two for the first shell).

Section B: Core Concepts & Explanations

1. Describe the arrangement of electrons within an atom.

2. Explain how the group number of an element in the Periodic Table is determined by its electronic structure.

3. Explain how the period number of an element in the Periodic Table is determined by its electronic structure.

4. Describe the general trend in reactivity for Group 1 metals as you move down the group, and explain why this trend occurs.

Section C: Exam Application & Extended Writing

1. The diagram below shows a simplified Bohr model of an atom.

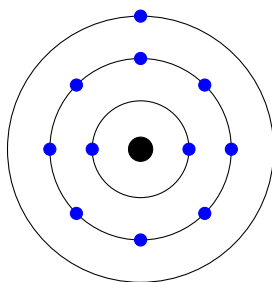


Figure 1: Simplified atomic model

- a) Based on the diagram, state the following for this atom:

i) Group number:

ii) Period number:

iii) Identify the element:

2. Explain and compare the trends in reactivity for Group 1 metals and Group 7 non-metals as you move down their respective groups. You should refer to their electronic structure and how it influences their chemical behaviour. (6 marks)
