

Periodic Table

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Phosphorus has atomic number 15. Write its electronic structure and state its group and period. (3 marks)

Step 1 · Fill shells 2, then 8, then 8

15 electrons: $2 + 8 + 5 \rightarrow 2,8,5$

Step 2 · Outer shell

5 electrons $\rightarrow$ group 5

Step 3 · Number of shells

3 shells $\rightarrow$ period 3

Answer: 2,8,5; group 5; period 3

Check: $2 + 8 + 5 = 15$ ✓

2. Now try one with the steps

Explain why sodium and potassium have similar chemical properties. (2 marks)

Step 1 · Electronic structures

Step 2 · Link to reactions

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Write the electronic structure of magnesium (atomic number 12). [1]

2. Write the electronic structure of sulfur (atomic number 16). [1]

3. An element has the electronic structure 2,8,7. State its group number. [1]

4. An element has the electronic structure 2,8,7. State its period number. [1]
-
-
5. State how the elements are arranged in the modern periodic table. [1]
-
-
6. State the number of electrons in the outer shell of a calcium atom (atomic number 20). [1]
-
-
7. Explain why elements in the same group have similar chemical properties. [2]
-
-
8. Element X has the electronic structure 2,8,8,1. State its group and period. [2]
-
-
9. Write the electronic structure of an aluminium ion, Al^{3+} (atomic number 13). [1]
-
-
10. Explain, in terms of electrons, why metals are found on the left of the periodic table. [2]
-
-
11. Explain why Mendeleev left gaps in his periodic table. [2]
-
-
12. Explain how the discovery of germanium supported Mendeleev's table. [2]
-
-
13. Before the discovery of protons, early tables ordered elements by atomic weight. Explain why this caused some elements to be in the wrong group. [2]
-
-
14. Element Q is in period 2 and group 6. Write its electronic structure and identify it. [2]
-
-

4. Before you hand it in

Putting 8 electrons in the first shell

For the first 20 elements: 2, then 8, then 8, then 2.

Confusing groups (columns) with periods (rows)

Group = outer electrons (down a column). Period = number of shells (across a row).

"The periodic table is ordered by atomic mass."

The modern table is ordered by atomic number (protons).