

GCSE Combined Science: Trilogy

Worksheet: The periodic table

TIME 25 min	TOTAL 24 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: The periodic table

NAME _____ **CLASS** _____ **DATE** _____

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

The modern periodic table contains more than 100 elements.

0 1 . 1

Complete the sentence.

Tick (✓) **one** box.

The elements in the periodic table are arranged in order of

atomic number

☐

mass number

☐

number of neutrons

☐

relative atomic mass

☐

[1 mark]

0 1 . 2

What name is given to a vertical column of elements in the periodic table?

.....

.....

.....

[1 mark]

0 1 . 3

Why do elements in the same vertical column of the periodic table have similar chemical properties?

.....

.....

[1 mark]

0 1 . 4

Why is the table called a *periodic* table?

.....

.....

[1 mark]

0 2

The elements in the periodic table are arranged in rows and columns.

0 2 . 1

What name is given to a horizontal row of the periodic table?

.....

.....

.....

.....

[1 mark]

0 2 . 2

Complete the sentence.

The elements in the periodic table are arranged in order of their

Tick (✓) **one** box.

atomic number

☐

date of discovery

☐

mass number

☐

number of neutrons

☐

[1 mark]

0 3

Table 1 shows the electronic structures of four elements, **A**, **B**, **C** and **D**.

Table 1

Element	Electronic structure
A	2,8,1
B	2,5
C	2,8,8,2
D	2,8,4

0 3 . 1

Which **two** elements are in the same period? Give a reason for your answer.

.....

.....

.....

.....

[2 marks]

0 3 . 2

Which element is in Group 4?

.....

.....

.....

.....

[1 mark]

0 3 . 3

Which element is in Period 4?

.....

.....

.....

.....

[1 mark]

0 4

Calcium is in Period 4 and Group 2 of the periodic table.

0 4 . 1

Give the number of occupied energy levels (shells) and the number of outer-shell electrons in a calcium atom.

.....

.....

.....

.....

[2 marks]

0 4 . 2

Use this information to give the electronic structure of a calcium atom.

.....

.....

.....

.....

[1 mark]

0 4 . 3

Give the atomic number of calcium.

.....

.....

.....

Atomic number =

[1 mark]

0 5

Table 2 shows the electronic structures of five elements, **A** to **E**.

Table 2

Element	Electronic structure
A	2,8,2
B	2,1
C	2,8,8
D	2,8,8,2
E	2,7

0 5 . 1

Which **two** elements are in the same group?
Give a reason for your answer.

.....

.....

.....

.....

[2 marks]

0 5 . 2

Which element is in Group 0?

.....

.....

.....

.....

[1 mark]

0 5 . 3

Give the group number and the period number of element **E**.

.....

.....

.....

.....

[2 marks]

0 5 . 4

Element **A** reacts with element **E** to form an ionic compound.
Predict the formula of this compound. Use the letters A and E.

.....

.....

.....

.....

[1 mark]

0 6

The position of an element in the periodic table can be predicted from its electronic structure.

0 6 . 1

Explain how the electronic structure of an atom is related to its period and group in the periodic table, and why elements in the same group have similar chemical reactions.

.....

.....

.....

.....

.....

.....

.....

.....

[4 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: The periodic table · 24 marks

Question 1 (4 marks)

01.1 [1 mark]

Correct: atomic number

01.2 [1 mark]

Answer: a group

- group (1)
-

01.3 [1 mark]

Answer: Their atoms have the same number of electrons in the outer shell.

- (atoms have the) same number of electrons in the outer shell / energy level (1)
-

01.4 [1 mark]

Answer: Similar properties occur at regular intervals.

- similar properties occur at regular intervals (1)

Notes: Allow 'properties repeat regularly'.

Question 2 (2 marks)

02.1 [1 mark]

Answer: a period

- period (1)
-

02.2 [1 mark]

Correct: atomic number

Question 3 (4 marks)

03.1 [2 marks]

Answer: A and D; both have three occupied shells.

- A and D (1)
 - they both have three occupied shells / energy levels (1)
-

03.2 [1 mark]

Answer: D

- D (1)
-

03.3 [1 mark]

Answer: C

- C (1)
-

Question 4 (4 marks)

04.1 [2 marks]

Answer: 4 occupied shells; 2 outer-shell electrons

- 4 occupied shells / energy levels (1)
 - 2 electrons in the outer shell (1)
-

04.2 [1 mark]

Answer: 2,8,8,2

- 2,8,8,2 (1)
-

04.3 [1 mark]

Answer: 20

- 20 (1)

Notes: Allow ECF from the electronic structure given.

Question 5 (6 marks)

05.1 [2 marks]

Answer: A and D; both have 2 electrons in the outer shell.

- A and D (1)
 - (both have) 2 electrons in the outer shell / same number of outer electrons (1)
-

05.2 [1 mark]

Answer: C

- C (1)
-

05.3 [2 marks]

Answer: Group 7, Period 2

- Group 7 (1)
 - Period 2 (1)
-

05.4 [1 mark]

Answer: AE_2

- AE_2 (1)

Notes: Allow E_2A .

Question 6 (4 marks)

06.1 [4 marks]

Answer: The number of occupied shells gives the period; the number of outer electrons gives the group; elements in the same group have the same number of outer electrons, which mainly determines how they react.

Levels of response

- **Level 2 (3–4)** A clear, logically linked answer covering the key points accurately.
- **Level 1 (1–2)** One or two relevant points with little linking.
- **No marks (0)** Nothing relevant or worthy of credit.

Indicative content

- the number of occupied electron shells (energy levels) in an atom is equal to its period number
 - the number of electrons in the outer shell is equal to its group number (for Groups 1–7)
 - elements in the same group have the same number of outer-shell electrons
 - it is mainly the outer-shell electrons that determine how an atom reacts, so elements in the same group react in similar ways
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