

Exercise walk-through

Noble gases ■ 8.5

eXercise

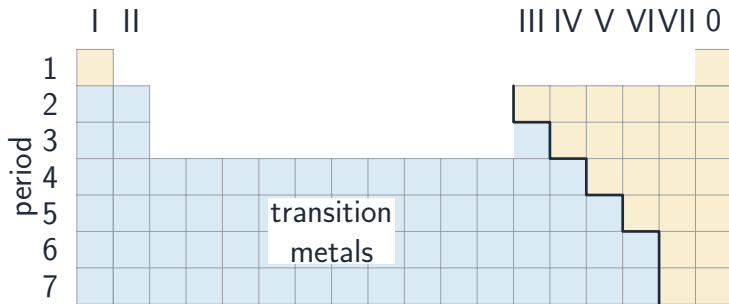
You must be able to

- describe the noble gases (monatomic, unreactive)
- explain their lack of reactivity using electron shells

Method — Why noble gases are unreactive

- they are **monatomic** (single atoms) and **unreactive**.
- they have a **full outer shell**, so they don't need to gain, lose or share electrons.

Method — Why noble gases are unreactive



metal

non-metals

— metal / non-metal line

A schematic Periodic Table with Group VIII on the far right

Practice 2.1 ■ 1 mark

State why the noble gases are described as monatomic.

Solution 2.1

Method: Why noble gases are unreactive

Worked steps

they exist as single atoms (not joined into molecules) **B1**.

Practice 2.2 ■ 1 mark

State the position of the noble gases in the Periodic Table.

Solution 2.2

Method: Why noble gases are unreactive

Worked steps

Group VIII (0), on the far right **B1**.

Exam-style 3.1 ■ 1 mark

The noble gases are unreactive because they have:

- A** one outer electron
- B** seven outer electrons
- C** a full outer shell of electrons
- D** no electrons

Solution 3.1

Method: Why noble gases are unreactive

- A one outer electron
- B seven outer electrons
- C a full outer shell of electrons
- D no electrons



Worked steps

C. A full outer shell makes them unreactive.

Exam-style 3.2 ■ 2 marks

Argon is a noble gas.

- (a) Explain, using electrons, why argon does not form compounds easily.
- (b) State whether argon exists as single atoms or as molecules.

Solution 3.2

Method: Why noble gases are unreactive

Worked steps

- (a) argon has a full outer shell of electrons **M1**; so it does not need to gain, lose or share electrons, making it stable/unreactive **A1**.
- (b) single atoms **B1**.