Solutions

Each answer shows the steps, then the **result**.

2.1

- elements are arranged in order of **increasing proton number**

2.2

- Group II atoms lose two electrons
- the ion has charge +2

2.3

- the number of occupied electron **shells**

2.4

- **Group II**: two outer-shell electrons

3.1 B

- same **number of outer-shell electrons** gives similar properties
- A is period; C and D do not control chemistry

3.2

(a)

- Group VII means **7** outer-shell electrons

(b)

- it gains one electron, so the ion is -1

3.3

- elements in the same group have **similar properties**
- from its position you can **predict** how it reacts and trends in its group

3.4

(a)

- **2**, **8**, **8**, **1**
- one outer-shell electron: **Group I**
- four occupied shells: **Period 4**

(b)

- a **metal**: it is in Group I, on the left of the table
- it loses one electron to form a **+1** ion

3.5

- the elements change from **metals** on the left to **non-metals** on the right