

Solutions

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

2.1

- same element, same protons, different neutrons
- **atoms with the same proton number but different numbers of neutrons**

2.2

- they have the **same number of electrons** / the same electronic configuration

3.1 C

- isotopes differ in the number of **neutrons**
- A and D would be different elements; B would change the charge/chemistry

3.2

(a)

- weighted mean of the isotope masses

$$A_r = \frac{(10 \times 20) + (11 \times 80)}{100} = \frac{200 + 880}{100} = \mathbf{10.8}$$

(b)

- neutrons = $11 - 5 = \mathbf{6}$

3.3

- chemical reactions involve only the **electrons**
- isotopes have the **same electronic configuration**, so they react identically