

Solutions

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

2.1

- in diamond each carbon is bonded to **four** others

2.2

- graphite is used as a **lubricant** (or as an **electrode**)

3.1 B

- each carbon has one **free (delocalised) electron** that can move
- A is ionic; C would stop sliding; D is false

3.2

(a)

- each carbon is bonded to four others by **strong covalent bonds**
- a rigid 3-D network, so diamond is **very hard**

(b)

- graphite has layers held by **weak forces**
- the layers can **slide** over each other

3.3

- both are **giant covalent** structures with many strong covalent bonds
- a lot of energy is needed to break them, so the **melting point is very high**