

## 2 Chemical bonding – Part 2 —Answers

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### Answers

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Work through these after trying the questions yourself.

**2.1** (a) a metal and a non-metal \ (b) two non-metals.

**2.2** The strong electrostatic attraction between oppositely charged ions (a positive metal ion and a negative non-metal ion).

**2.3** When solid, the ions are fixed in place and cannot move; when molten the ions are free to move and carry charge.

**2.4** A shared pair of electrons between two atoms.

**2.5** In graphite each carbon uses only three of its outer electrons in bonds, leaving one free (delocalised) electron that can move and carry charge; in diamond all four are used in bonds, so none is free.

**2.6** Sodium chloride is a giant ionic lattice with strong forces between the oppositely charged ions, which need a lot of energy to break. Methane is small molecules with only weak forces *between* the molecules, which need little energy —so it melts at a much lower temperature.