

## 5 Enthalpy changes – Part 1 —Answers

---

### Answers

---

Work through these after trying the questions yourself.

**5.1** (a) negative \ (b) positive.

**5.2** Lower.

**5.3** The least (minimum) energy the particles need before they can react.

**5.4** (a) breaking takes in energy \ (b) making gives out energy.

**5.5**  $\Delta H = (436 + 193) - (2 \times 366) = 629 - 732 = -103 \text{ kJ mol}^{-1}$ .

**5.6** A negative  $\Delta H$  means the reaction is exothermic: more energy is *released* when the new bonds form than is *taken in* to break the old bonds, so there is a net release of energy to the surroundings.