**6** A dog sits on a water-filled bag to keep cool.
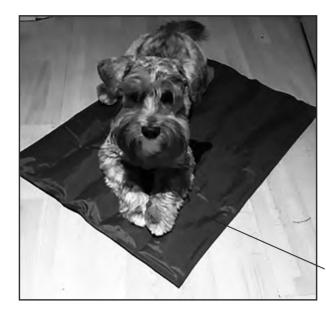


water-filled bag

(a) The table shows some data about the dog and the water in the bag.

| | |
|---|---|
| mass of water in kg | 8.7 |
| power output of dog by heating in W | 75 |
| specific heat capacity of water in J/kg °C | 4200 |
| initial temperature of water in °C | 16 |

The dog sits on the bag for 22 minutes.

(i) Calculate the energy transferred from the dog to the water by heating in 22 minutes.

**(3)**

energy = .......................................................... J

(ii) State an assumption you have made when calculating the energy transferred.

**(1)**

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(iii) Calculate the temperature of the water after 22 minutes.

(4)

temperature = .......................................................... °C

(b) Discuss why conduction is the main way that thermal energy is transferred from the dog to the water.

(3)

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**(Total for Question 6 = 11 marks)**

P 5 8 3 7 4 A 0 1 3 2 0