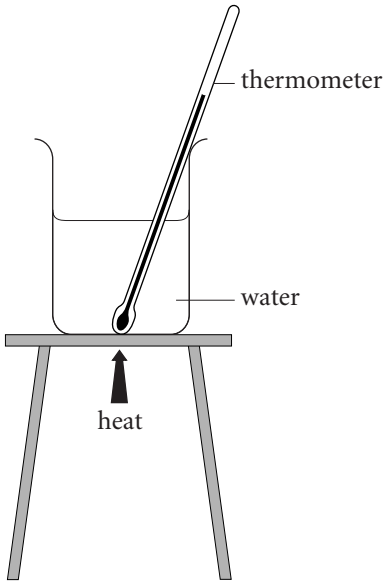
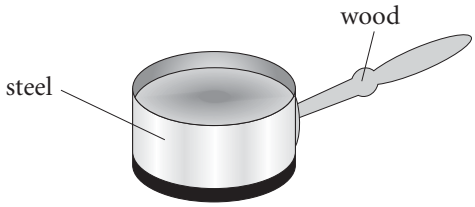
**1** Some students are doing a heating experiment. They are recording the temperature of water.




**a** What is the boiling point of water? (1 mark)

**b** Copy and complete this sentence.
Energy flows from the Bunsen burner flame to the water because there is a .... (1 mark)

**2** A steel saucepan has a wooden handle.

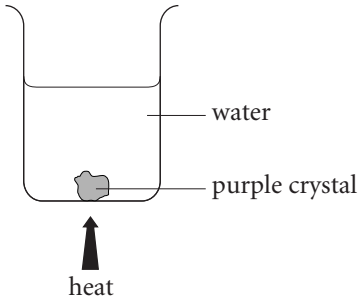



**a** Why would it not be sensible to use a metal handle? (1 mark)

**b** What property of wood makes it a good choice for the handle? (1 mark)

**c** Suggest another material that could be used to make the handle. (1 mark)

**3** **a** Copy the diagram below and draw in two arrows to show the convection currents that are set up when the water is heated. (1 mark)

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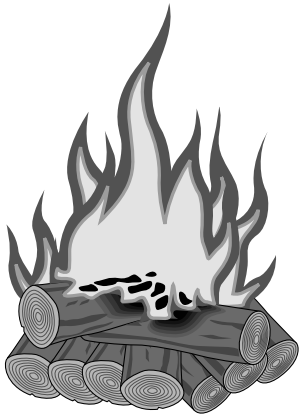
**b** Explain why the hot water moves. (1 mark)

**c** Sketch the diagram below. Add to it to show the convection currents in air that you would expect around a bonfire. (2 marks)

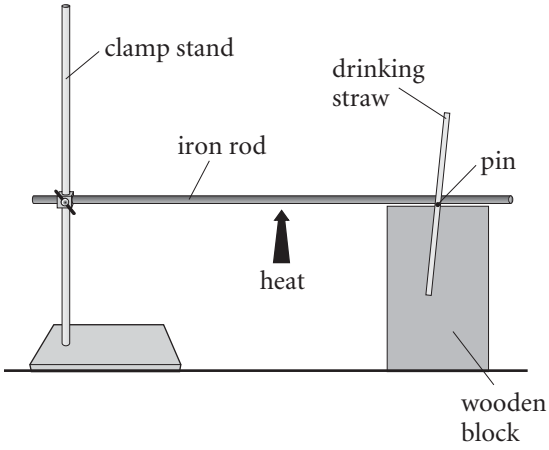


**d** Air is a poor conductor of heat. Why does the air around your house not keep the house warm? (1 mark)

**4** Study the diagram of an iron rod being heated.

**a** What happens to the length of the rod when it is heated and then allowed to cool? (1 mark)

**b** Explain what happens in terms of the particles of iron in the rod as the rod cools. (2 marks)



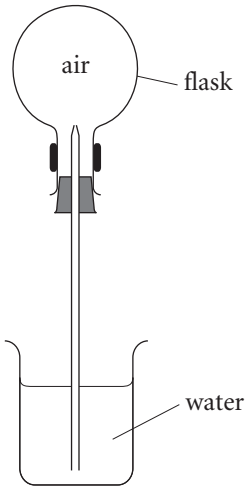

**5** In an experiment, the apparatus was set up as shown in the diagram.

**a** The flask was heated gently. What would you see in the water? (1 mark)

**b** What would happen to the air in the flask as it was heated to cause this? (1 mark)

**c** What would happen to the air in the flask as it cooled? (1 mark)

**d** What would happen to the water in the beaker as the flask cooled? (1 mark)

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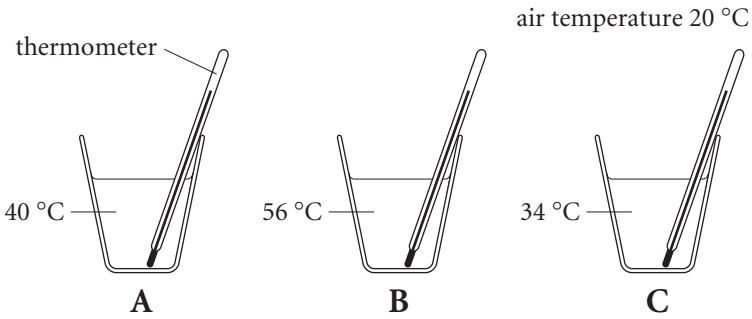
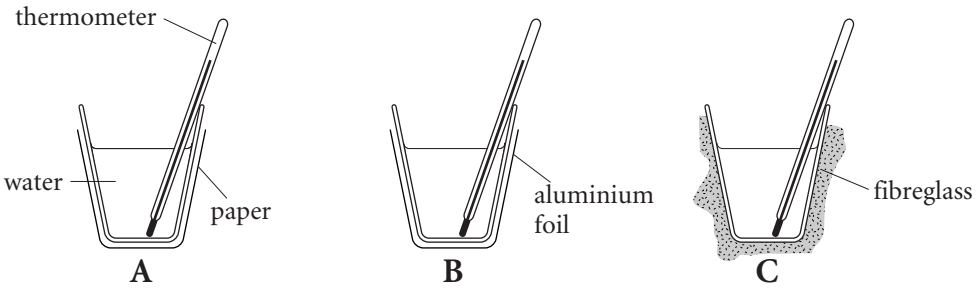
**6 a** The diagram below shows cups of hot drinks at different temperatures.
Which one will lose heat fastest? (1 mark)

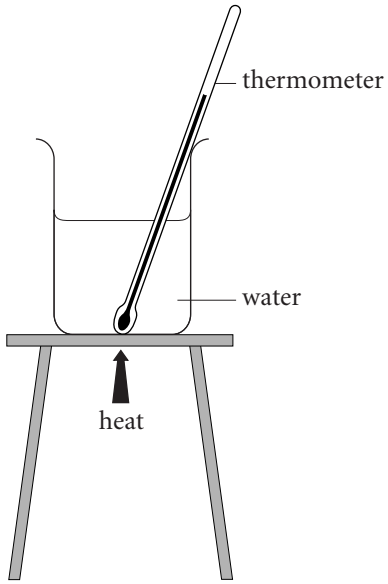



**b** Which diagram below shows the best insulation to reduce the heat loss from a cup? (1 mark)




**c** Most good insulators are made of materials that have lots of air spaces. Why does this make them good insulators? (1 mark)

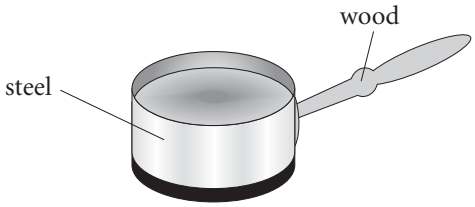
**1** Some students are doing a heating experiment. They are recording the temperature of water.




**a** Give the melting and boiling points of water. (1 mark)

**b** Copy and complete this sentence.
Energy flows from the Bunsen burner flame to the water because there is a … (1 mark)

**2** A steel saucepan has a wooden handle.

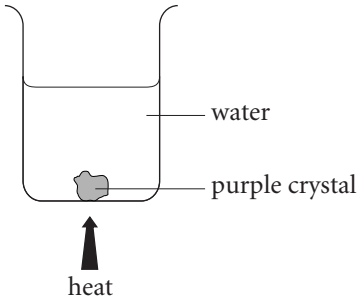



**a** Why would it not be sensible to use a metal handle? (1 mark)

**b** What property of wood makes it a good choice for the handle? (1 mark)

**c** Suggest another material that could be used to make the handle. (1 mark)

**3** **a** Copy the diagram below and draw in two arrows to show the convection currents that are set up when the water is heated. (1 mark)

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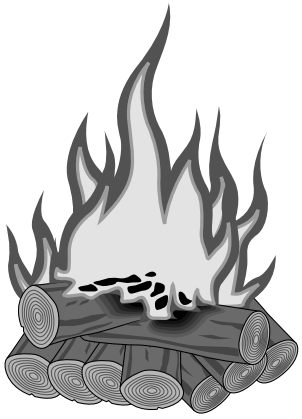
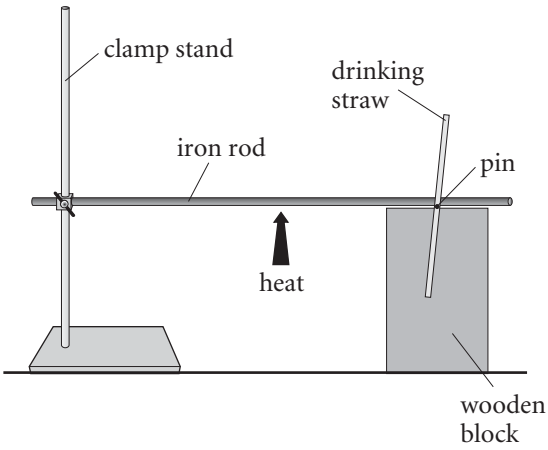
**b** Explain why the hot water moves. (1 mark)

**c** Sketch the diagram below. Add to it to show the convection currents in air that you would expect around a bonfire. (2 marks)



**d** Air is a poor conductor of heat. Why does the air around your house not keep the house warm? (1 mark)

**4** Explain why the rod below expands when it is heated. (2 marks)

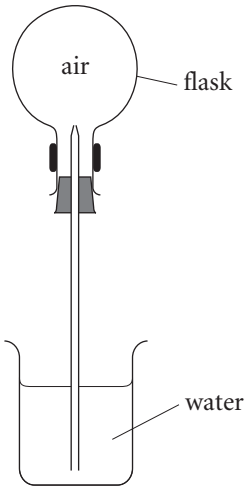



**5** In an experiment the apparatus was set up as shown in the diagram.

**a** What would happen to the air particles in the flask as it was heated? (1 mark)

**b** What would happen to the air in the flask as it cooled? (1 mark)

**c** What would happen to the water in the beaker as the flask cooled? (1 mark)

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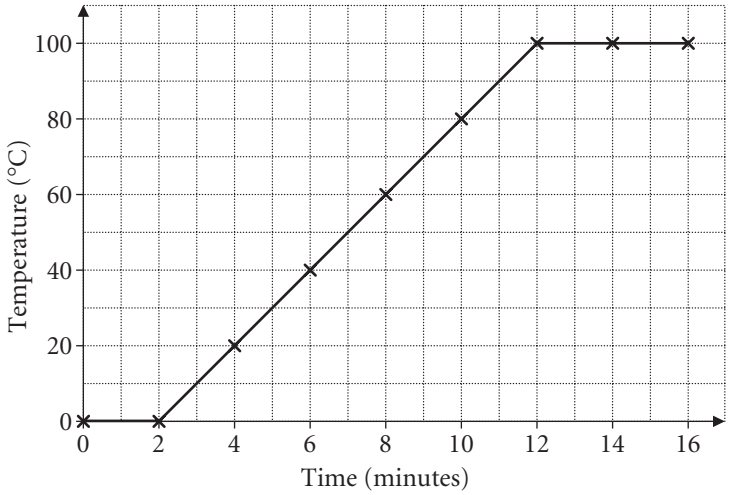
# Heating and cooling continued

**6** Some ice cubes were placed in a beaker of water. The beaker was then heated with a Bunsen burner. The temperature of the water was recorded every two minutes. The graph of the results is shown below.




**a** Explain why the temperature of the ice remains at 0 °C for several minutes even though the ice is being heated up. (1 mark)

**b** Explain the change from water to steam in terms of the forces between the particles. (1 mark)

**7** What is the main method of heat transfer involved in each of the following?

**a** heat travelling from the Sun to Earth (1 mark)

**b** the air in a room heated by an electric heater (1 mark)

**c** heat travelling through a mat between a Bunsen burner and the bench below (1 mark)