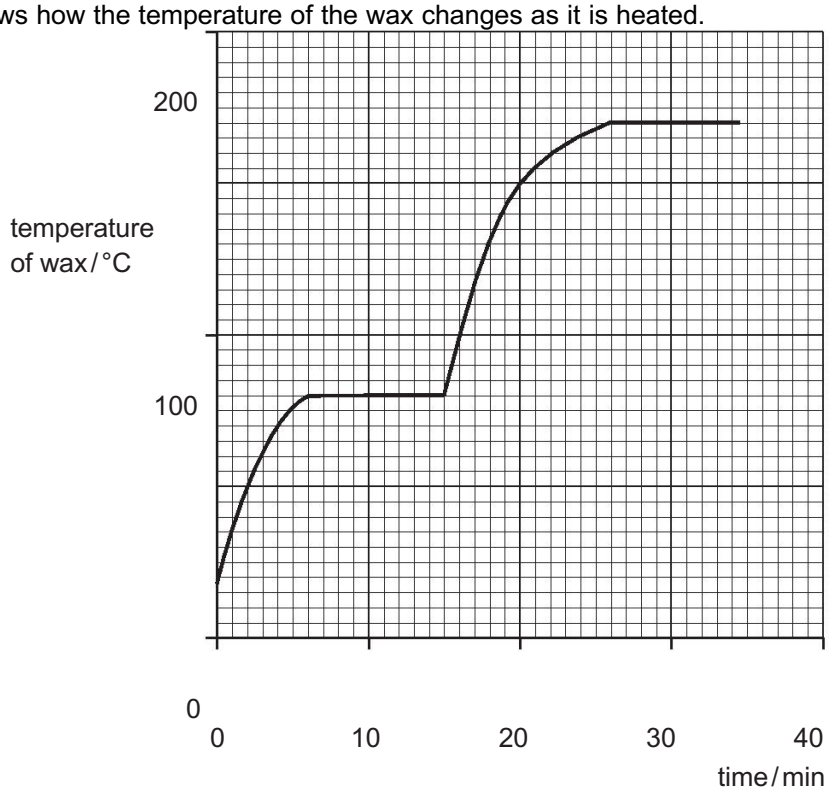
Name: _____
Section: _____
Date: _____

1 A teacher fills a copper can with solid wax and heats the can. She measures the temperature of the wax every minute. She continues heating once the wax has melted and stops heating when the wax is boiling.

The graph shows how the temperature of the wax changes as it is heated.



Using the graph, determine:

1. the melting point of the wax ..... °C

2. the boiling point of the wax ..... °C

3. the time at which the wax starts to boil. ..... min

[3]

[Total: 3]

2 The temperature of a bridge rises from 5 °C on a cold night to 25 °C at midday.

What happens to the bridge?

A It becomes heavier.

B It becomes more dense.

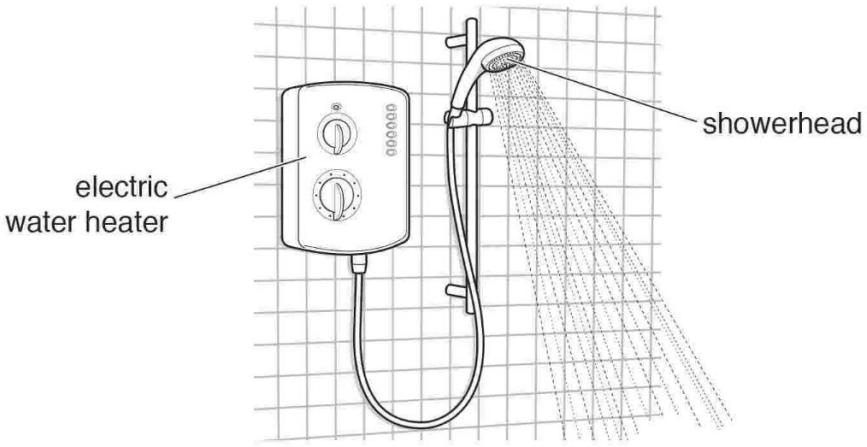
C Its length increases.

D Its mass increases.

[1]

[Total: 1]

3 The diagram shows a shower that takes in cold water. The water passes through an electric water heater and emerges from the showerhead at a higher temperature.



The power of the heater is 9000 W.

The specific heat capacity of water is 4200 J / (kg °C). The initial temperature of the cold water is 16 °C.

Determine the maximum mass of water that can be heated to a temperature of 35 °C in 1.0 s.

mass = ... [4]

[Total: 4]

4 Complete the table to give the relative order of magnitude of the expansion of gases, liquids and solids for the same increase of temperature.

Write one of these words in each blank space.

gas **liquid** **solids**

expands most	
expands least	

[2]

[Total: 2]

5 State and explain any effect on the sensitivity of a liquid-in-glass thermometer of increasing the volume of the liquid-filled bulb.

.....

.....

..... [2]

[Total: 2]

6 An electrical heater is placed on the floor of a room in a house. The heater is switched on.

The heater has a power of 1.5 kW. The air in the room has a mass of 65 kg. The specific heat capacity of air is 720 J / (kg °C).

(a) Calculate the time it takes for this heater to raise the temperature of the air in the room from 8.0 °C to 15.0 °C.

time = ... [4]

(b) State **two** reasons why the time calculated in **(a)** is smaller than the actual time taken to raise the temperature of the air in the room from 8.0 °C to 15.0 °C.

1 .....

.....

2 .....

..... [2]

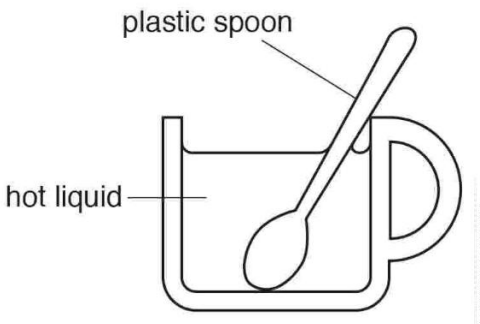
7 Write the correct term for each change of state below each arrow in the diagram.

solid ⟹ liquid gas ⟹ liquid

....

[2]

8 The diagram shows a cold plastic spoon that has just been placed in hot liquid in a cup.



The cup contains 150 g of liquid of specific heat capacity 4.2 J / (g °C). When the cold spoon is placed into the hot liquid, the temperature of the liquid decreases from 80 °C to 56 °C.

Calculate the loss of thermal energy from the liquid.

energy loss = ... [3]