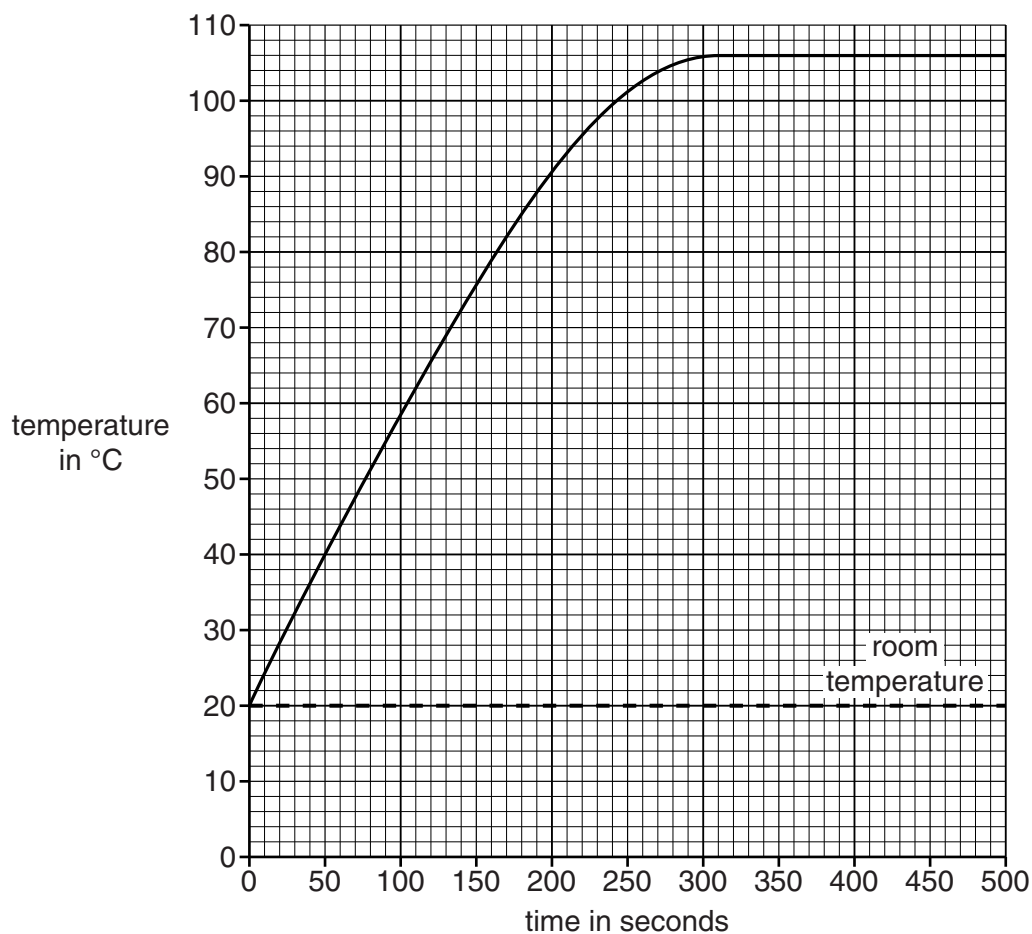


3 Layla heats a beaker containing a liquid and records its temperature.

Look at the graph of her results.



(a) Layla concludes that the liquid boiled during the experiment.

How does the graph show this?

.....
 [1]

(b) What is the boiling point of the liquid?

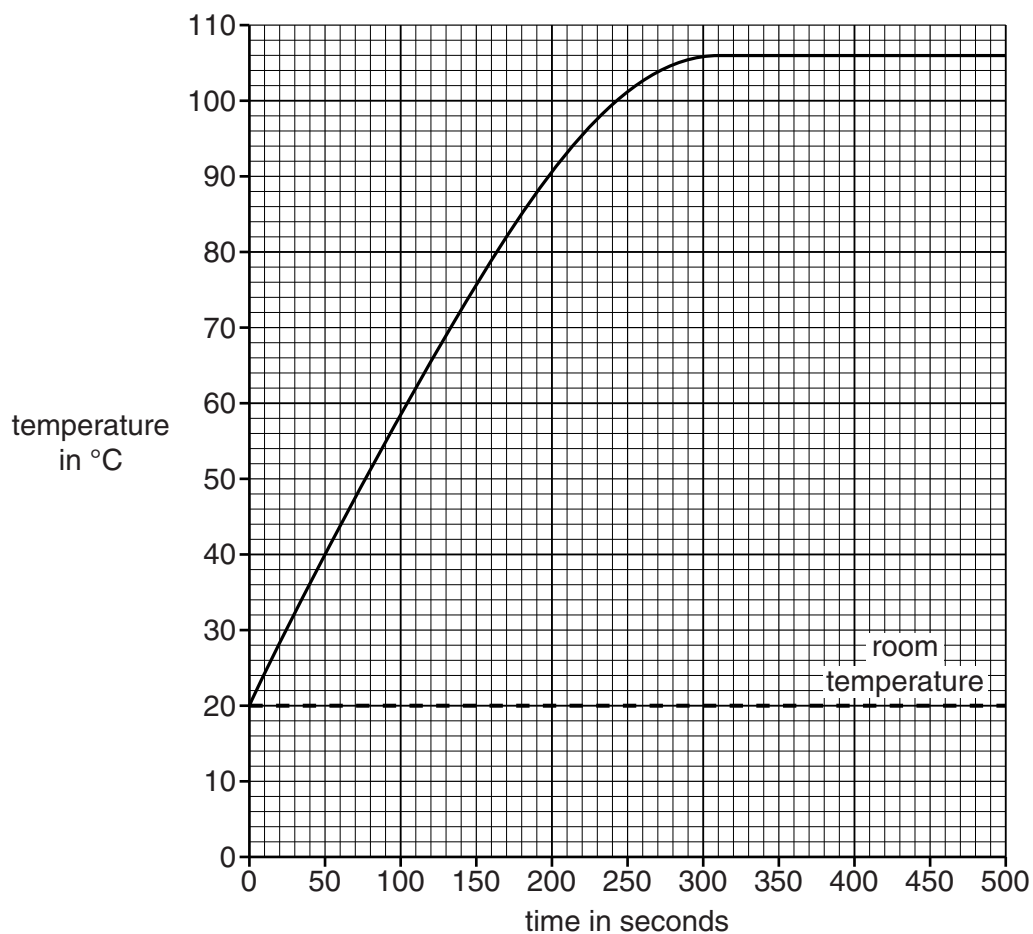
answer °C.

[1]

[Total: 2]

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.....
 [1]

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answer °C.

[1]

[Total: 2]

3 Dave experiments heating different materials.

(a) He needs to choose a heater to warm some water.

The table shows how much energy different heaters supply in 600 seconds.

Heater	Energy supplied in joules
A	5000
B	10 000
C	20 000
D	25 000
E	35 000

Dave needs to increase the temperature of 0.6 kg of water by 12 °C in 600 seconds.

Water has a specific heat capacity of 4200 J/kg °C.

Do a calculation to find out which heater Dave needs. Show your working.

.....

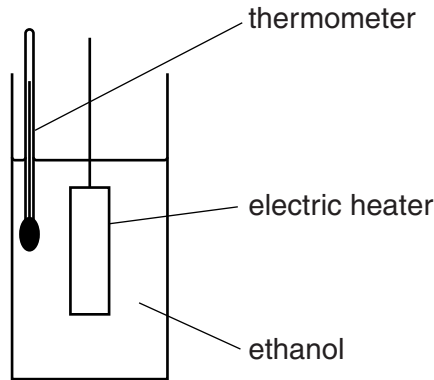
 J

The heater Dave needs for this is

[2]

(b) Dave needs to boil some ethanol. He uses an electrical heater.

Look at the diagram.



(i) The ethanol is at its boiling point.

Dave measures the temperature of the ethanol as it boils.

What happens to the temperature of ethanol when it is boiling?

..... [1]

(ii) The specific latent heat of ethanol is 850 J/g.

Calculate the energy needed to boil 12 g of ethanol.

.....
.....

answer J [2]

(iii) When Dave does this experiment he finds that he needs more energy to boil the ethanol than he expected.

Suggest reasons why.

.....
.....
..... [2]

[Total: 7]

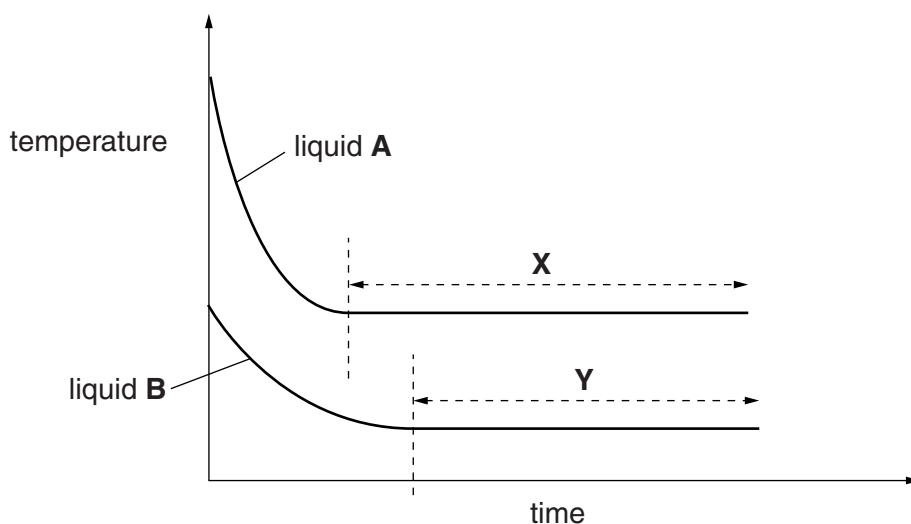
Answer **all** the questions.

Section A – Module P1

1 Amir investigated the cooling of two different liquids.

He used the **same mass** of each liquid.

Look at the graph of his results.



(a) Suggest a reason why liquid **A** cooled more quickly than liquid **B** at the **start**.

.....
 [1]

(b) Look at parts **X** and **Y** of the graph.

(i) What is happening to the liquids in parts **X** and **Y** of the graph?

Choose from

boiling freezing melting

answer [1]

(ii) What unit is energy measured in?

Put a tick (✓) in the box next to the correct answer.

°C	
Hz	
J	
kg	

[1]

[Total: 3]
Turn over

Answer **all** the questions.

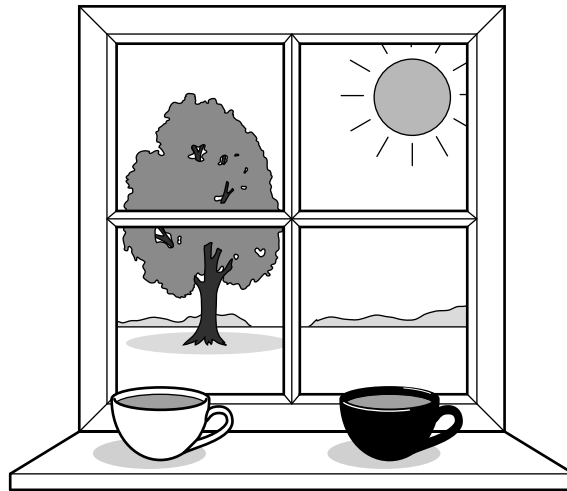
Section A – Module P1

1 This question is about heating up and cooling down.

(a) Dave puts his **cold** drink into two cups.

One cup is black the other cup is white.

He puts **both** cups near a **sunny** window.



The **black** cup heats up more quickly than the white cup. Suggest why.

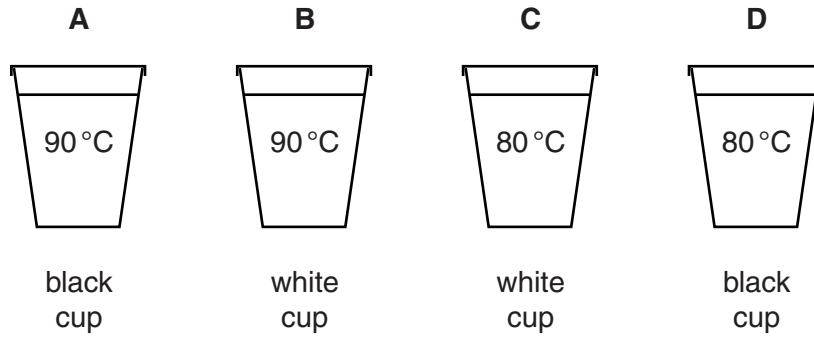
.....
..... [1]

(b) Dave tests how things cool down.

He puts equal amounts of hot water into four cups of the same type.

The cups have lids and are either black or white.

Look at the information in the diagrams.



He measures the temperature using a **thermogram**.

(i) How does a thermogram show different temperatures?

.....
..... [1]

(ii) The water and cups cool down.

Which cup cools the quickest?

Choose from **A** **B** **C** **D**

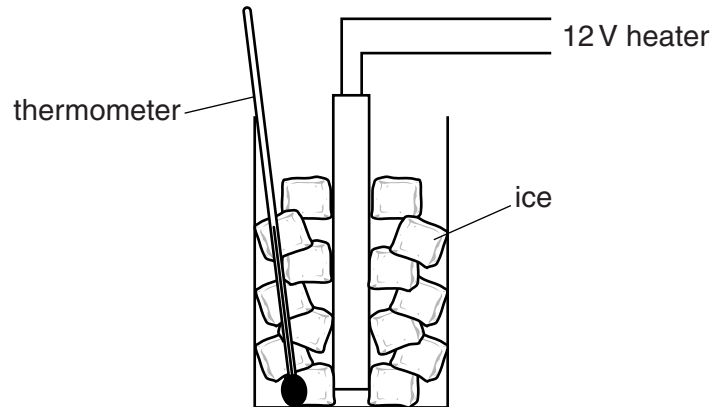
answer

Explain your answer.

.....
.....
..... [3]

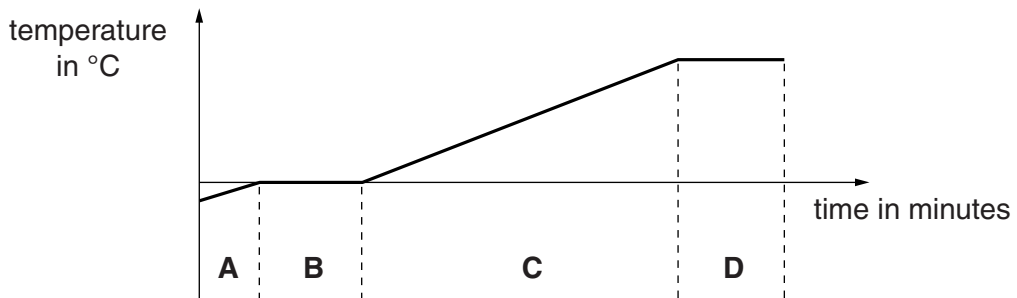
(c) Dave heats some ice in a beaker.

Look at the diagram.



He measures the temperature of the ice as it is heated.

Look at the sketch graph of his results.



Which parts of the graph show the ice melting and the water boiling?

Melting happens in part

Boiling happens in part

These parts show melting **and** boiling because

.....

.....

..... [2]

[Total: 7]