Thermal Properties & Temperature

Question Paper 2

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Thermal Properties & Temperature
Booklet	Question Paper 2

Time allowed: **23 minutes**

Score: **/18**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

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When steam condenses it becomes liquid water. When liquid water solidifies it becomes ice.

What happens to the temperature of steam while it is condensing, and what happens to the temperature of water while it is solidifying?

	temperature of steam while it is condensing	temperature of water while it is solidifying
A	decreases	decreases
B	decreases	stays the same
C	stays the same	decreases
D	stays the same	stays the same

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A thermometer has graduations which start at –10 °C and end at 110 °C.

What is the lower fixed point and what is the upper fixed point of the Celsius scale?

	lower fixed point / °C	upper fixed point / °C
A	–10	100
B	–10	110
C	0	100
D	0	110

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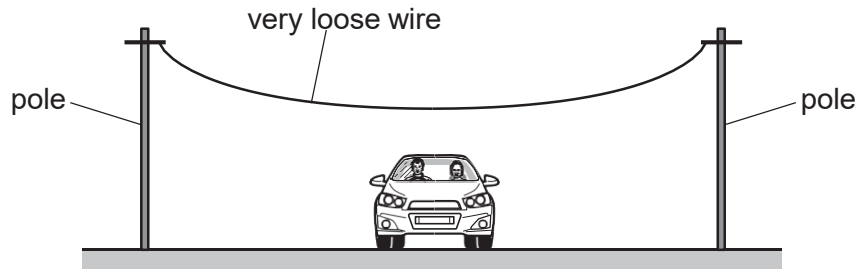
A telephone engineer connects a wire between two poles when the weather is very cold.

He makes the wire very loose. The wire passes over a road.



The weather changes and it becomes very hot.

What could happen to the wire and why?

	what could happen	why
A	it breaks	it contracts
B	it breaks	it expands
C	it sags and touches cars on the road	it contracts
D	it sags and touches cars on the road	it expands

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In an experiment, a thermometer is placed in a test-tube of hot liquid. The temperature of the liquid is recorded every half minute. The table shows the results.

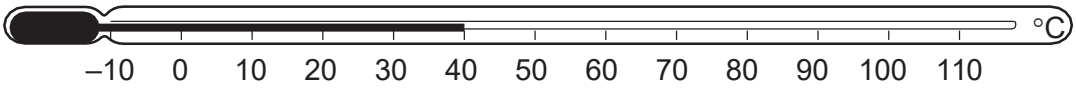
time/minutes	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
temperature/°C	73	65	59	55	55	55	51	48	45	42	40	38	36	35	34	33

What is the melting point of the substance?

A 0 °C B 33 °C C 55 °C D 73 °C

Question 5

A liquid-in-glass thermometer is marked with a scale in °C.



What is the temperature difference between the two fixed points for this thermometer?

A 40°C B 50°C C 100°C D 120°C

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Which statement gives the thermal capacity of a solid body?

A. the energy needed to melt the body without a change in temperature

B. the energy per degree Celsius needed to raise the temperature of the body

C. the increase in the volume of the body when its temperature is raised by one degree Celsius

D. the total amount of internal energy in the body

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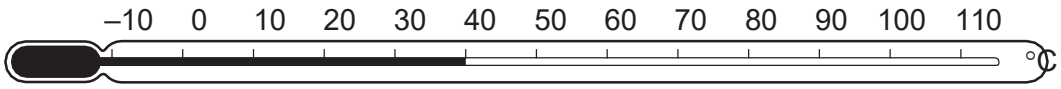
Which points are the fixed points of the liquid-in-glass thermometer shown?



A. the beginning and end points of the column of liquid

B. the beginning and end points of the thermometer scale

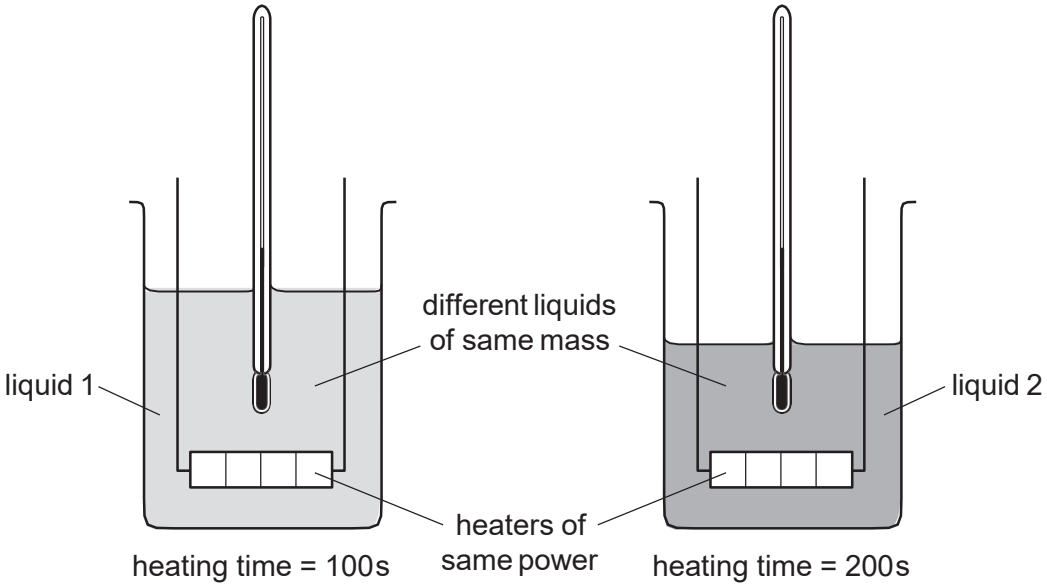
C. the points marked 0 °C and 100 °C

D. the top and bottom points of the thermometer bulb

Equal masses of two different liquids are put into identical beakers.

Liquid 1 is heated for 100 s and liquid 2 is heated for 200 s by heaters of the same power.

The temperature of both liquids increases by the same amount.



Which statement is correct?

A. Both liquids receive the same amount of energy.

B. Liquid 1 receives more energy than liquid 2.

C. Both liquids have equal thermal capacity.

D. The thermal capacity of liquid 1 is less than the thermal capacity of liquid 2.

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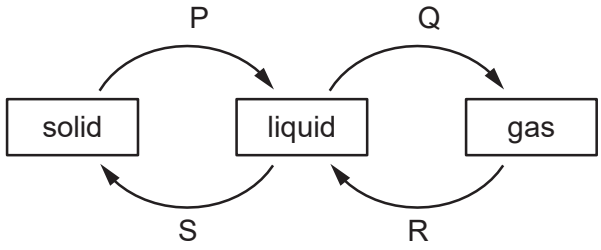
The diagram shows four labelled changes of state between solid, liquid and gas.



Which changes need an energy input?

A P and Q B Q and R C R and S D S and P

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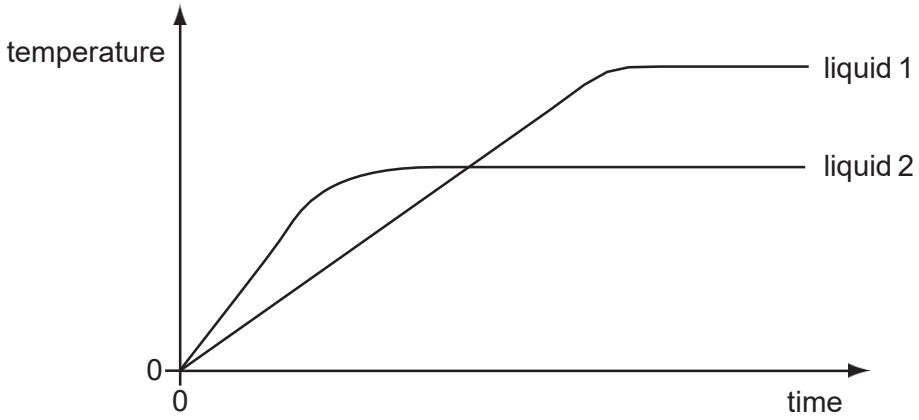
Equal masses of two different liquids are heated using the same heater. The graph shows how the temperature of each liquid changes with time.



What does the graph tell us about the liquids?

A Liquid 1 has a higher melting point than liquid 2.

B Liquid 1 has a higher boiling point than liquid 2.

C Liquid 1 starts to melt sooner than liquid 2.

D Liquid 1 starts to boil sooner than liquid 2.

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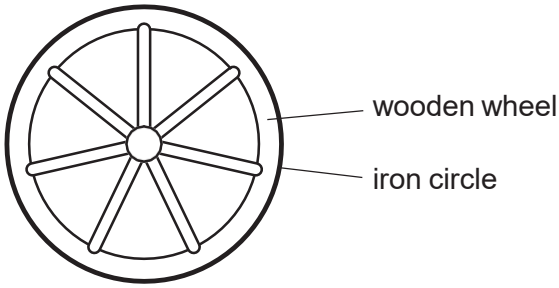
A wooden wheel can be strengthened by putting a tight circle of iron around it.



Which action would make it easier to fit the circle over the wood?

A. cooling the iron circle

B. heating the iron circle

C. heating the wooden wheel and cooling the iron circle

D. heating the wooden wheel but not heating or cooling the iron circle

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Which pair contains **only** physical quantities that vary with temperature and so could be used in making a thermometer?

A. activity of a radioactive source, volume of a gas

B. mass of a liquid, volume of a liquid

C. activity of a radioactive source, mass of a solid

D. volume of a gas, volume of a liquid.

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A heater supplies 80 J of energy to a block of metal. The temperature of the block rises by 20 °C.

What happens to the block of metal when its temperature falls by 10 °C?

A Its internal energy decreases by 40 J.

B Its internal energy decreases by 160 J.

C Its internal energy increases by 40 J.

D Its internal energy increases by 160 J.

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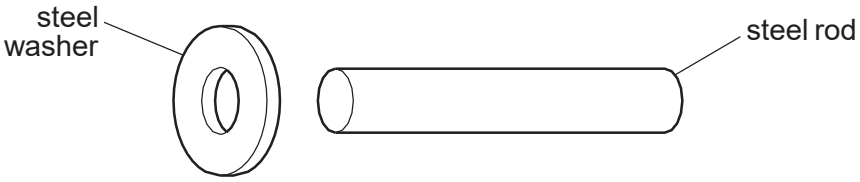
An engineer wants to fix a steel washer on to a steel rod. The rod is just too big to fit into the hole of the washer.



How can the engineer fit the washer on to the rod?

A. Cool the washer and put it over the rod.

B. Cool the washer and rod to the same temperature and push them together.

C. Heat the rod and then place it in the hole.

D. Heat the washer and then place it over the rod.

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An ice cube at a temperature of 0 °C is put into a drink at a temperature of 10 °C.

After a short time, some of the ice has melted and the drink has cooled to a temperature of 8 °C.

What is the temperature of the remaining ice?

A 0 °C B 2 °C C 4 °C D 8 °C

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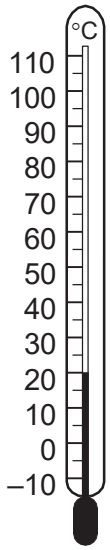
The diagram shows a thermometer calibrated in degrees Celsius.



What are the values of the lower fixed point and of the upper fixed point on the Celsius scale?

	lower fixed point / °C	upper fixed point / °C
A	–10	110
B	0	20
C	0	100
D	20	100

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To mark the lower fixed point of a Celsius scale on a thermometer, the thermometer should be placed in

A. pure alcohol.

B. pure distilled water.

C. pure melting ice.

D. pure mercury.

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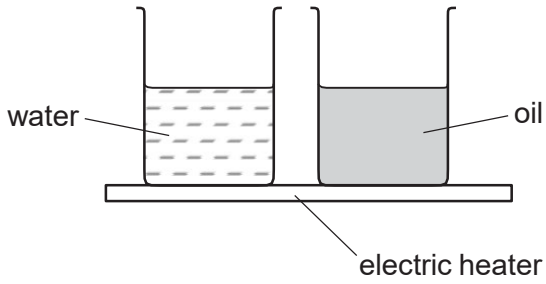
The diagram shows an electric heater being used to heat a beaker of water and an identical beaker of oil for several minutes.



The temperature of the water and the temperature of the oil increase constantly. The rise in temperature of the oil is much greater than that of the water.

Why is this?

A. The oil has a higher boiling point than water.

B. The oil has a higher thermal capacity than water.

C. The oil has a lower boiling point than water.

D. The oil has a lower thermal capacity than water.