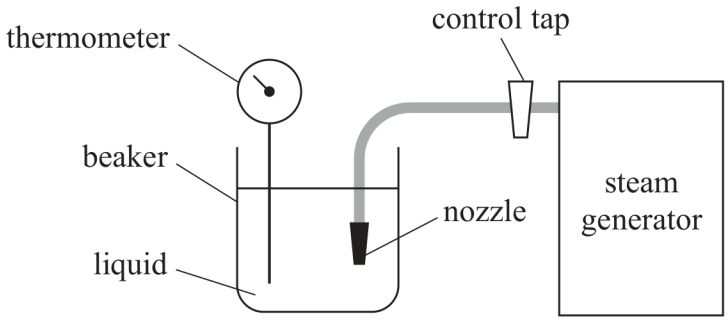
Answer ALL questions.

1 A student investigated heating a liquid using the apparatus shown.



The control tap adjusts the rate of flow of steam from the nozzle. The steam heats the liquid in the beaker.

(a) The student used a kitchen thermometer. The thermometer scale is shown below.

(i) State the resolution of the thermometer in °C.

(1)

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(ii) The student heated the liquid. He started a stopwatch and recorded the temperature of the liquid. He recorded the time at fixed intervals of temperature, as the temperature increased.

Explain why this method was better than starting a stopwatch and recording the temperature at fixed intervals of time.

(2)

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(b) The student repeated the investigation with a different liquid. He started timing at the same initial temperature.

(i) State another control variable that would allow him to compare the specific heat capacities for the two liquids.

(1)

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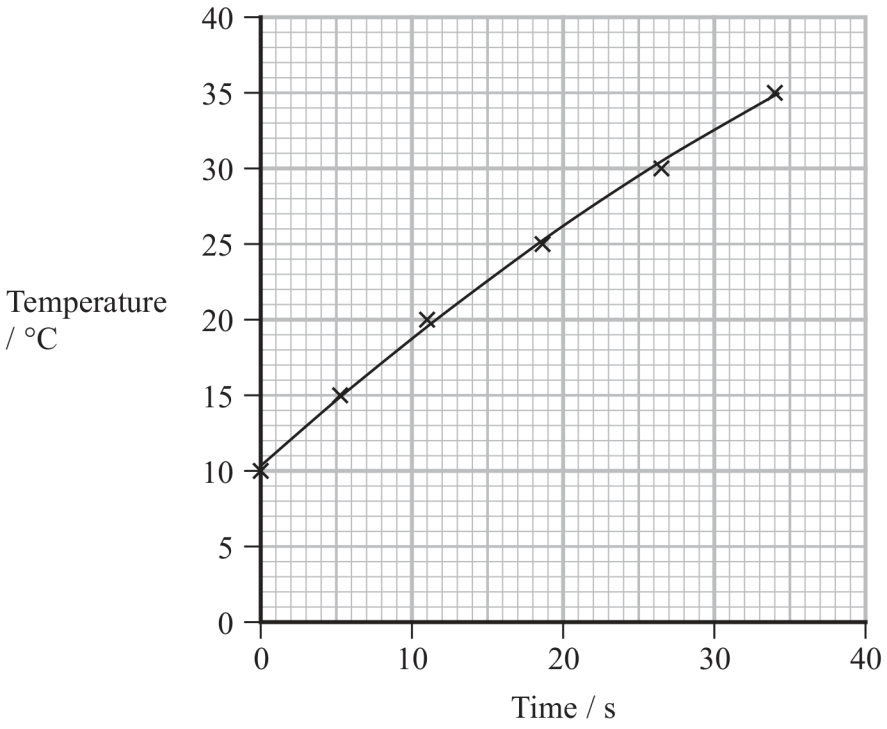
(ii) The student plotted a graph of temperature against time for the first liquid, as shown.



Sketch on the graph the line for a liquid with a greater specific heat capacity.

(2)

(c) Another student performed the investigation using a temperature probe connected to a data logger.

Give two reasons why this would improve the investigation.

(2)

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(Total for Question 1 = 8 marks)