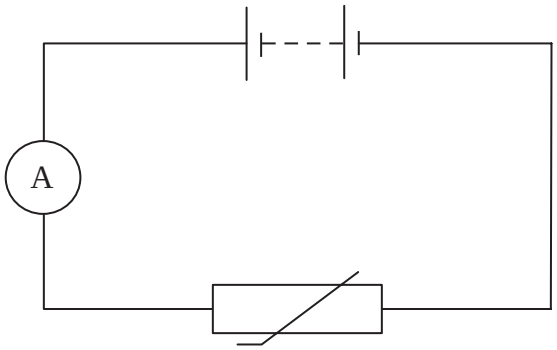
10 A student investigates how the resistance of a thermistor changes with temperature. He measures a current and a voltage.

The diagram shows part of the circuit that the student uses.



(a) (i) Label the thermistor on the diagram.

(1)

(ii) Add to the diagram to show how a voltmeter should be connected.

(2)

(b) The student varies the temperature of the thermistor and obtains the results below.

Temperature in °C	0	20	40	60	80	100
Current in mA	0.8	2.0	4.2	8.2	15.1	26.6

(i) State the equation linking voltage, current and resistance.

(1)

(ii) The voltage across the thermistor is 12 V.

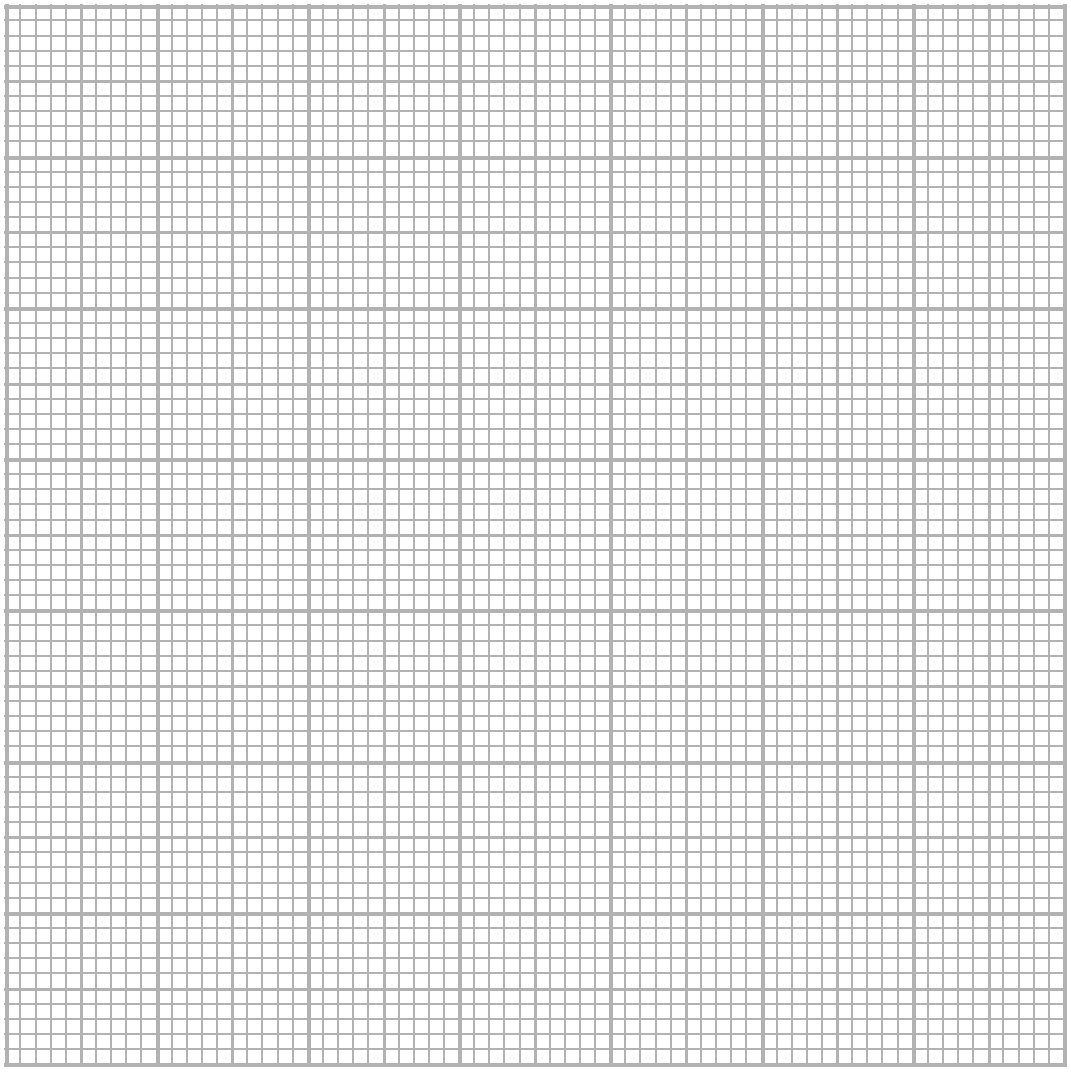
Calculate the resistance of the thermistor at 20 °C.

(2)

Resistance = ... Ω

(iii) Use the results from the table opposite to plot a graph of current against temperature.

(5)



(iv) Use your graph to describe how the current in the thermistor changes as the temperature increases.

(2)

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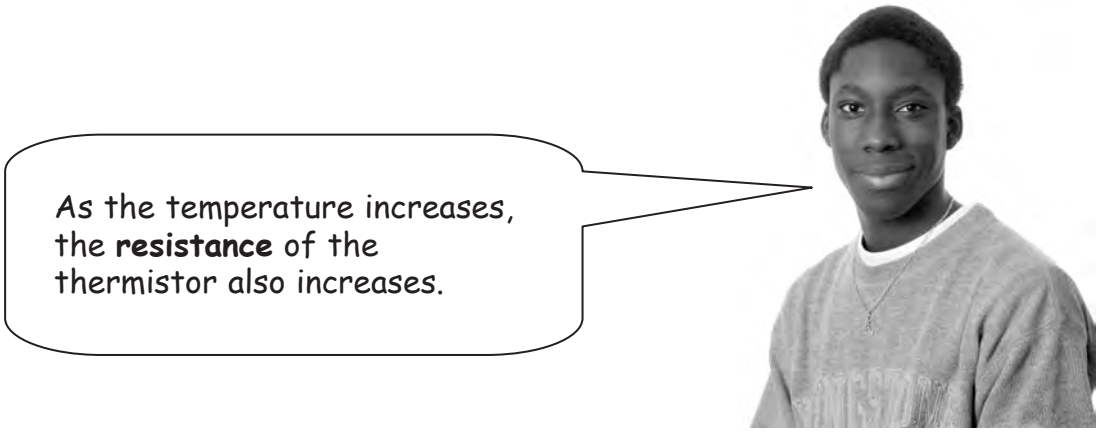
(v) The student concludes:



Evaluate this conclusion.

(2)

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(Total for Question 10 = 15 marks)