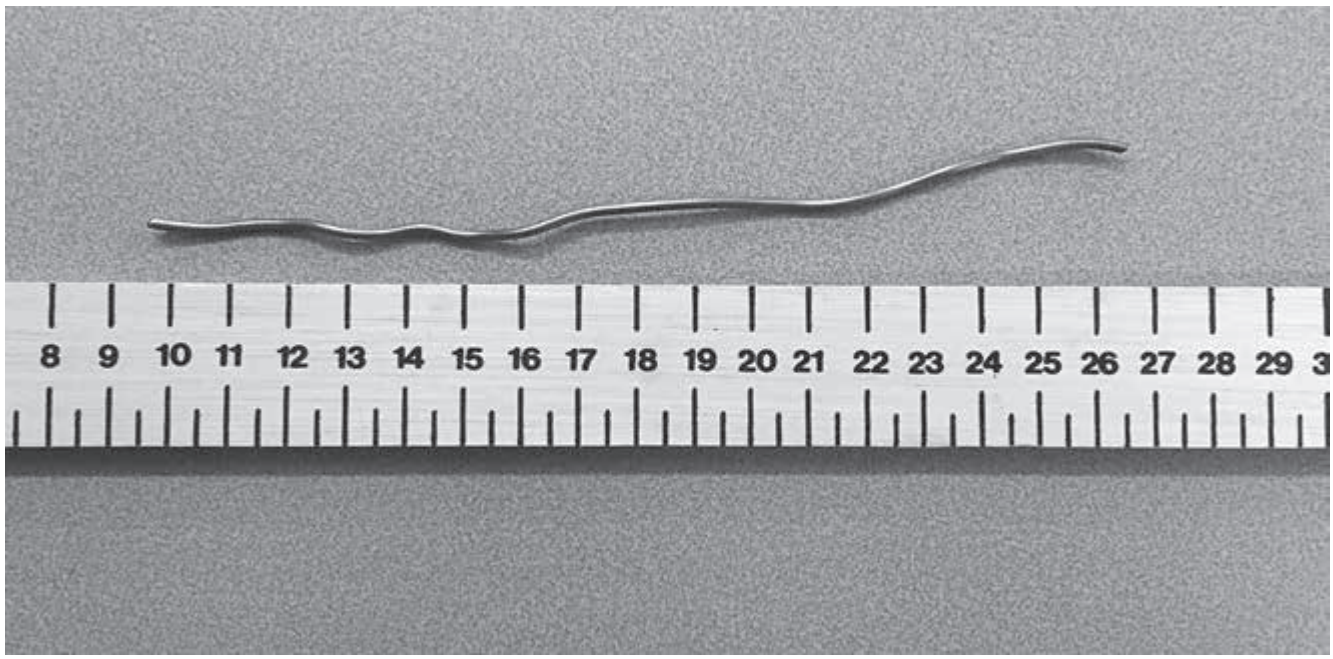
5 A student investigates how the length of a piece of wire affects its resistance.

(a) The photograph shows how he uses a ruler to measure the length of the wire.



(i) State how the student could improve the precision of his measurement.

(1)

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(ii) Suggest three ways the student could improve the accuracy of his measurement.

(3)

1 .....

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2 .....

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3 .....

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(b) The student finds the resistance for seven different lengths of wire.

He does this by passing a small current through each wire.

(i) Explain why the current in each wire must be small.

(2)

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(ii) The table shows the student's results.

Length of wire in cm	Resistance in ohms
10	2.8
15	4.5
20	6.1
50	14.9
55	16.3
60	18.0
65	19.4

Suggest two improvements the student could make to the data he collects.

(2)

1 .....

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2 .....

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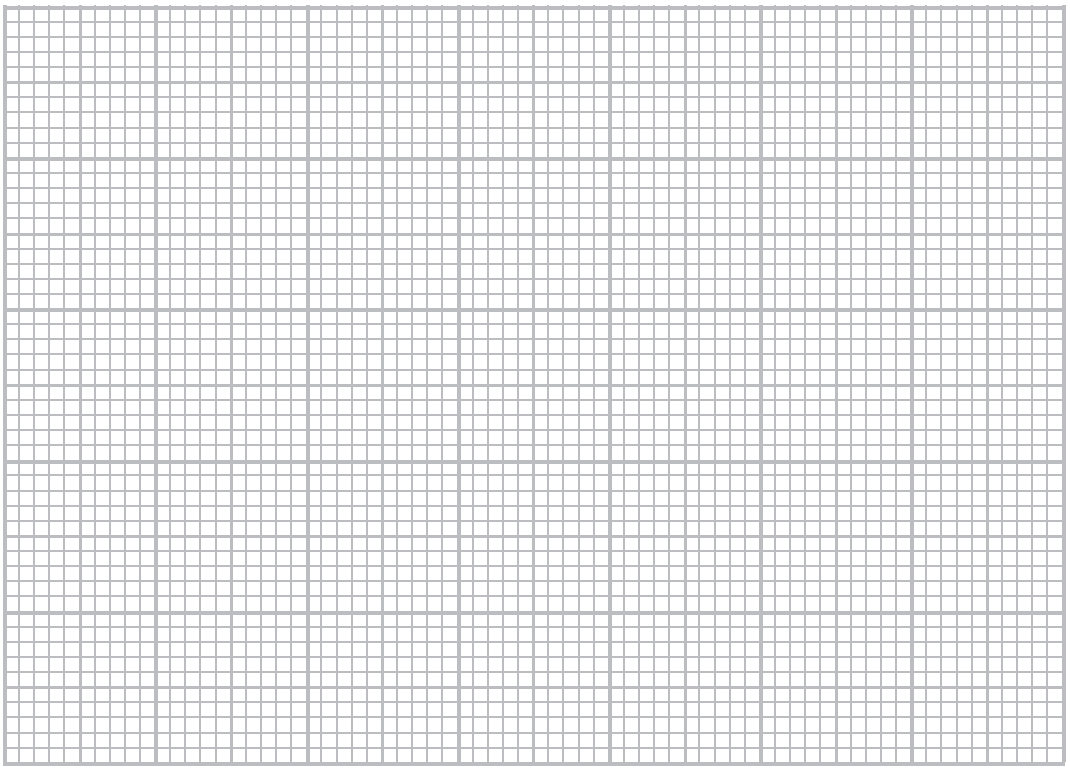
(iii) Plot a graph of the student's results on the grid.

(4)

(iv) Draw the line of best fit.

(1)



(v) Describe the relationship shown by the graph.

(2)

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(Total for Question 5 = 15 marks)