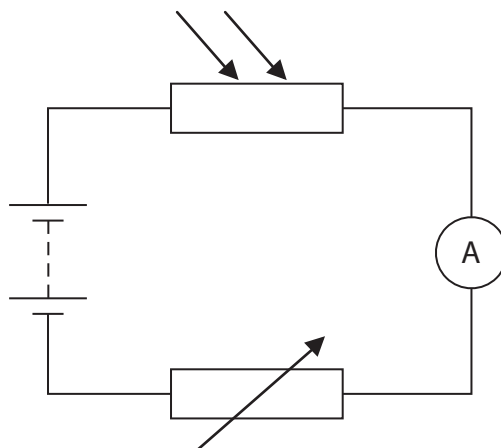


- 5 The resistance of a Light Dependent Resistor (LDR) is affected by the amount of light that shines on it.

A student investigates this relationship using the circuit shown.



- (a) (i) The student uses a voltmeter to measure the voltage across the LDR.

Add this voltmeter to the circuit diagram.

(2)

- (ii) Explain how the student can work out the resistance of the LDR using this circuit.

(2)

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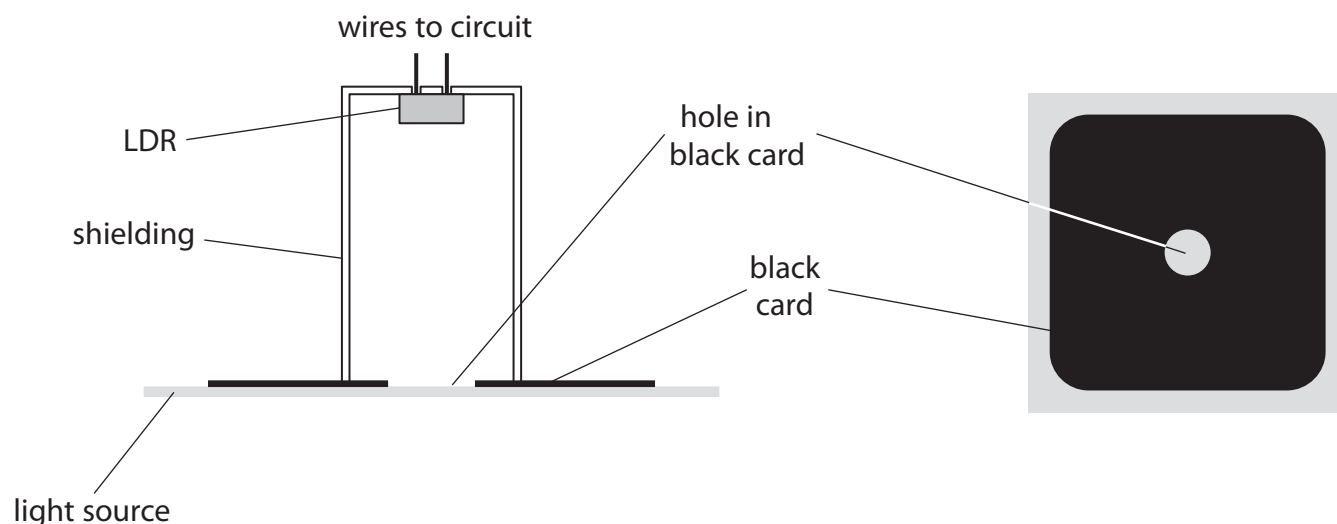


- (b) The student shines light on the LDR through a circular hole in a piece of black card, as shown in the diagram.

The student repeats the experiment using cards with holes of different diameter.

The distance from the card to the LDR is always 5 cm.

The student varies the current in the circuit by adjusting the variable resistor.



- (i) The independent variable in this experiment is

(1)

- ☐ A the brightness of the light source
- ☐ B the diameter of the hole
- ☐ C the distance from the card to the LDR
- ☐ D the resistance of the LDR

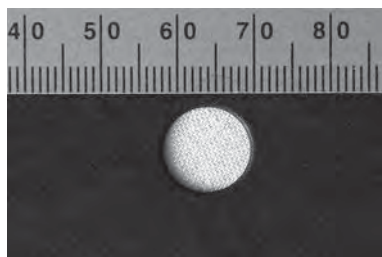
- (ii) A controlled variable in this experiment is

(1)

- ☐ A the current in the circuit
- ☐ B the diameter of the hole
- ☐ C the distance from the card to the LDR
- ☐ D the resistance of the LDR



- (iii) The photograph shows how the student places a metal ruler to measure the diameter of one of the holes.



Suggest how the student can improve this technique while still using the same ruler. (1)

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- (c) The table shows the student's results.

Diameter of hole in mm	Resistance of LDR in $\Omega$
8	1050
10	890
15	640
20	490
23	430
30	340

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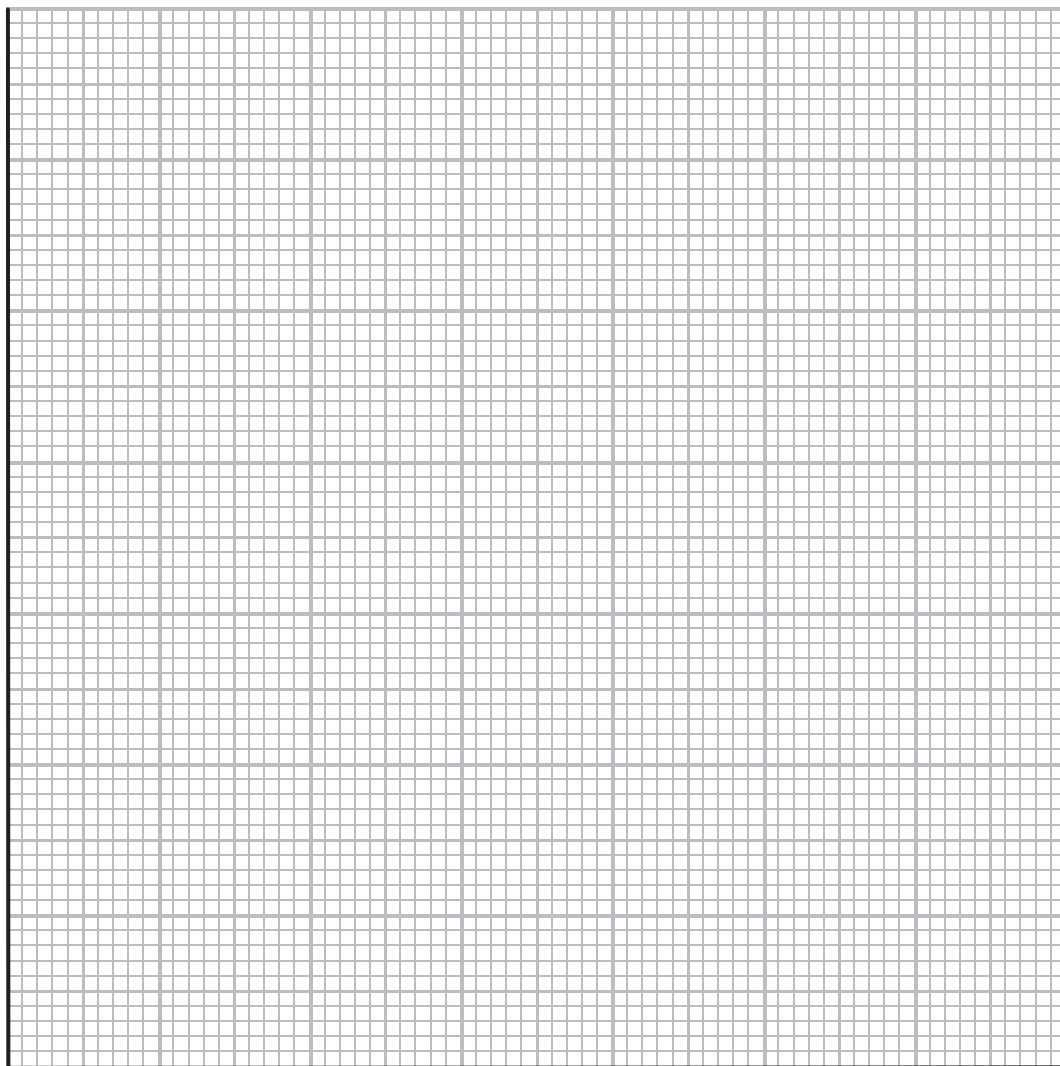
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- (i) Plot the student's results on the grid.

(4)



- (ii) Draw a curve of best fit on the graph.

(1)

- (iii) Describe the relationship between the resistance of the LDR and the diameter of the hole.

(2)

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(Total for Question 5 = 14 marks)

