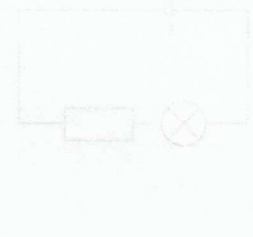
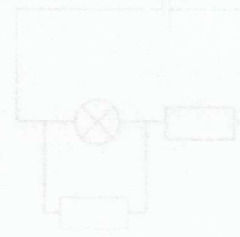
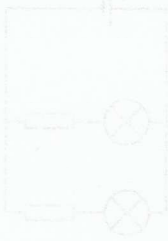


Circuit Devices

- 1 A student wants to measure the resistance of a light dependent resistor.



- 1.1 Draw a circuit diagram (including an ammeter and a voltmeter) that can be used to measure the resistance of an LDR.



[3]

The resistance of an LDR changes depending on its surroundings.

- 1.2 State what happens to the resistance of an LDR as the surrounding light intensity increases.

[1]

- 1.3 Give **one** example of a device that uses a light dependent resistor.

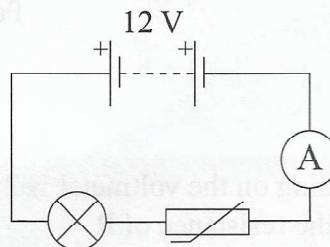
[1]

[Total 5 marks]

- 2 **Figure 1** shows a circuit that can be used for a light that lights up when the surface of a cooker is hot. Describe how the circuit works.



Figure 1



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[Total 4 marks]

Exam Practice Tip

You may be asked to interpret the resistance graph of an LDR or thermistor. Remember the graph starts off steep and then levels out. So for an LDR at low light intensities, a small change in light intensity will cause a large change in resistance.

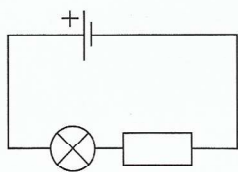


Series Circuits

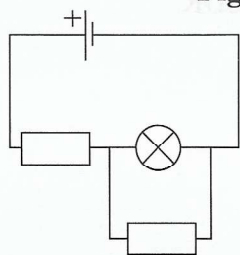
- 1 **Figure 1** shows a number of circuits.
Tick the box below the diagram that shows **all** the components connected in **series**.

Grade
4-6

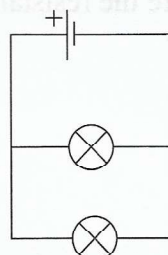
Figure 1



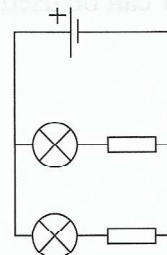
A ☐



B ☐



C ☐



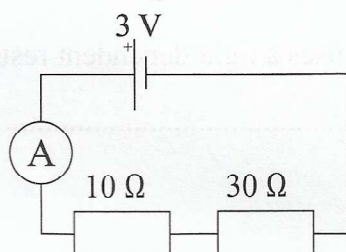
D ☐

[Total 1 mark]

- 2 In the circuit in **Figure 2**, the reading on the ammeter is 75 mA.

Grade
6-7

Figure 2



- 2.1 Calculate the total resistance of the two resistors.

Resistance = ... Ω
[1]

- 2.2 Find the potential difference across the 30 Ω resistor.

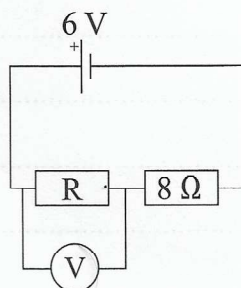
Potential Difference = ... V
[2]

[Total 3 marks]

- 3 In the circuit in **Figure 3**, the reading on the voltmeter is 2 V.
Component R is a resistor. Find the resistance of R.

Grade
7-9

Figure 3



Resistance = ... Ω
[Total 5 marks]



Parallel Circuits

- 1 Draw a circuit diagram consisting of a cell and two filament lamps connected in parallel.

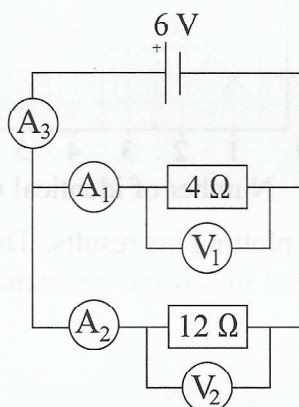
Grade
4-6

[Total 1 mark]

- 2 **Figure 1** shows a circuit with a 6 V supply and 4 Ω and 12 Ω resistors connected in parallel. There are also three ammeters and two voltmeters in the circuit.

Grade
6-7

Figure 1



- 2.1 Determine the readings on voltmeters V_1 and V_2 .

Potential difference = ... V
[1]

- 2.2 Calculate the currents through A_1 and A_2 .

A_1 current = ... A, A_2 current = ... A
[5]

- 2.3 Calculate the current from the supply as measured by A_3 .

A_3 = ... A
[1]

[Total 7 marks]

- 3* Explain why adding resistors in series increases the total resistance, whilst adding resistors in parallel decreases the total resistance.

Grade
7-9

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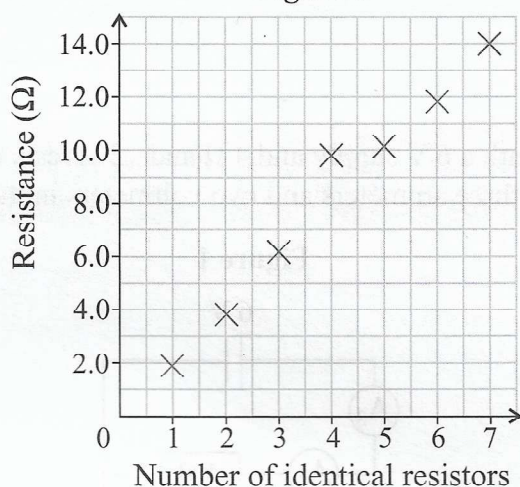
.....

[Total 6 marks]



PRACTICAL**Investigating Resistance**

- 1 A student is investigating how adding identical fixed resistors in series affects the resistance of the circuit. **Figure 1** shows his results.

**Figure 1**

- 1.1 The student made a mistake when plotting his results. Draw a line of best fit for the student's data on **Figure 1**. Use this to predict the correct resistance for the incorrectly plotted result.

Resistance = ... Ω
[2]

- 1.2 The student repeats his experiment, this time using $1\ \Omega$ resistors. Draw the predicted line of best fit for the results of this experiment on the axes in **Figure 1**.

[2]

[Total 4 marks]

- 2* A student wants to investigate how adding fixed resistors in parallel affects the overall resistance of a circuit. Describe an experiment the student could do to investigate this. You may draw a circuit diagram as part of your answer.



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[Total 6 marks]

