

# Commentary on candidate evidence

Candidate 1 – Resistance of a lamp when the voltage connected across it increases.

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Expected Response	Maximum mark	Mark awarded	Commentary
1 Aim	An aim that describes clearly the purpose of the investigation.	1	1	The candidate's aim clearly describes the purpose of the investigation.
2 Underlying physics	An account of physics relevant to the aim of the investigation.	3	1	<p>The candidate has shown a stated Ohm's law and commented on the direct proportionality relationship between voltage and current, and gives a crude description of resistance in terms of electrons 'colliding with atoms'. The candidate has made no attempt to extend their description to include possible temperature effects.</p> <p>The candidate has demonstrated a limited understanding of the underlying physics.</p>

Section	Expected Response	Maximum mark	Mark awarded	Commentary	
3	Data collection and handling				
3a	Brief description	A brief description of the approach used to collect experimental data.	1	1	<p>The candidate's description of their experiment is given in sufficient detail for the marker to be able to visualise the nature of the experiment.</p> <p>The candidate has included a circuit diagram, which is good practice, but not essential for the mark to be awarded.</p>
3b	Sufficient raw data	Sufficient raw data from the candidate's experiment.	1	0	<p>The range of the independent variable is adequate.</p> <p>The candidate stated that repeated measurements were made, but no repeated measurements were included in the table, and so the data in the table is insufficient and the mark for this section is not awarded.</p>
3c	Data table	Data from the candidate's experiment is presented in a correctly produced table.	1	1	<p>Each column in the candidate's table has clear headings, complete with units.</p>
3d	Mean/derived values	Mean and/or derived values calculated correctly.	1	1	<p>The candidate has correctly calculated the value for the resistance of the lamp for each applied voltage.</p> <p>In addition, a sample calculation is shown which is good practice.</p>
3e	Internet/ literature data	Data relevant to the experiment	1	1	<p>The candidate has included data from the internet which is relevant to their experiment.</p>

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		from an internet/literature source.			
3f	Reference	A reference for the source of the internet/literature data.	1	0	The candidate has given only an abbreviated URL for the website page containing the data given in the report, and so the data would not be retrievable from the reference given.
4	Graphical presentation				
4a	Appropriate format	A graph of the appropriate format.	1	1	The candidate has drawn a scatter graph, which is an appropriate format for the experimental data.
4b	Suitable scales	The axis/axes of the graph has/have suitable scale(s).	1	1	The candidate has used suitable linear scales for the axes of the graph.
4c	Suitable labels and units	The axes of the graph have suitable labels and units.	1	1	The candidate has labelled the axes of the graph correctly, and included a correct unit for the quantity on each axis.
4d	Accurately plotted data points	Accurately plotted data points and, where appropriate, a line of best fit.	1	0	The candidate has accurately plotted four of the five data points in the table, but the data point (2, 6.5) is not plotted accurately, and so the mark in this section is not awarded.

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				In addition, the candidate's line of best fit is not correct for the data points. From the data points, a curve may have been more appropriate.
5 Analysis	A valid comparison of the experimental data with data from the internet/literature source.	1	1	The candidate has stated '...its resistance goes up when the voltage goes up and that's what I found', which is acceptable as a comparison of the experimental and internet data.
6 Conclusion	A valid conclusion that relates to the aim and is supported by the data in the report.	1	1	The candidate has made a conclusion of the variation of resistance of a lamp with applied voltage based on data from both their experiment and the internet.
7 Evaluation	An evaluation of the experimental procedure.	2	0	The factor identified by the candidate, an improvement in the accuracy of the voltmeter, would not have a significant effect on the accuracy of the experiment, and so the marks for this section are not awarded.
8 Structure				
8a Title	The report has an informative title.	1	0	The candidate has not included an informative title.

<b>Section</b>	<b>Expected Response</b>	<b>Maximum mark</b>	<b>Mark awarded</b>	<b>Commentary</b>
8b Structure	A clear and concise report.	1	1	The candidate's report is clear and concise.
<b>TOTAL</b>		<b>20</b>	<b>12</b>	