

\*Mandatory for prize winners

| Level | Description  |
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| 5     | <p>The student has provided <b>clear and convincing evidence</b> that they:</p> <ul style="list-style-type: none"> <li>● completed a <b>valid</b> scientific investigation*</li> <li>● had <b>well-defined</b> aims and <b>clearly expressed</b> the subject of the investigation*</li> <li>● formulated a <b>testable hypothesis</b> based on prior research or previous observations*</li> <li>● identified <b>independent</b> and <b>dependent variables</b> (or <b>two variables</b> for correlation) and took deliberate steps to regulate and keep <b>controlled variables</b> constant*</li> <li>● made relevant observations using <b>replicated trials</b> or gathered <b>relevant secondary data</b>*</li> <li>● demonstrated a <b>deep understanding</b> of related science concepts*</li> <li>● used <b>critical thinking</b> to synthesise information and <b>argue the merits</b> of conclusions*</li> <li>● based their explanations on <b>plausible</b> scientific processes and causes*</li> <li>● accurately <b>identified</b> and took steps to <b>minimise</b> potential investigative risk</li> <li>● addressed an issue of <b>social</b> or <b>scientific significance</b>*</li> <li>● have been <b>innovative</b> or <b>creative</b> in their approach, content, methodology or communication to the audience</li> <li>● <b>identified</b> and <b>assessed</b> a range of procedures and provided <b>convincing arguments</b> for the procedure and technology selected</li> <li>● recorded data in an <b>organised, sequential</b> and <b>logical</b> manner using correct units</li> <li>● used <b>analytical tools</b> to <b>evaluate</b> trends, patterns and relationships in collected data</li> <li>● included a <b>concise</b> and <b>comprehensive</b> summary of <b>relevant</b> prior research in the field and its <b>reliability</b> assessed</li> <li>● suggested <b>creative</b> and <b>worthwhile</b> directions for future research in a succinct way included a <b>comprehensive</b> logbook, detailing the investigative process, from brainstorming, through data collection, to the final conclusion</li> <li>● comprehensively <b>acknowledged</b> the <b>nature</b> of all assistance</li> <li>● used <b>clear, concise, consistent</b> and <b>meaningful</b> language, visuals and sequencing to <b>effectively</b> communicate to the intended audience</li> </ul> |
| 4     | <p>The student has provided <b>substantial evidence</b> that they:</p> <ul style="list-style-type: none"> <li>● completed a <b>well-planned</b> scientific investigation</li> <li>● had <b>realistic</b> aims and <b>well-described</b> the subject of the scientific investigation</li> <li>● included a <b>summary</b> of current <b>relevant</b> information and checked its <b>reliability</b></li> <li>● proposed a <b>hypothesis</b> based on prior research or previous observations</li> <li>● had a <b>detailed understanding</b> of the science concepts used in the investigation</li> <li>● conducted a carefully <b>considered</b> risk assessment prior to experimentation</li> <li>● had been <b>innovative</b> or <b>creative</b> in content or methodology</li> <li>● gathered experimental or secondary data over a <b>number of trials</b> using appropriate technologies</li> <li>● recorded data in a <b>systematic</b> manner using <b>correct units</b></li> <li>● identified <b>independent</b> and <b>dependent variables</b> and worked to control them</li> <li>● <b>analysed</b> and <b>explained</b> trends, patterns and relationships in the data collected</li> <li>● used <b>critical thinking</b> to derive conclusions, suggesting ideas for future research</li> <li>● included a logbook <b>detailing</b> the different stages of the investigative process</li> <li>● <b>acknowledged</b> and provided details of any assistance given</li> </ul>  |

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|       | <ul style="list-style-type: none"> <li>communicated the report with <b>effective</b> use of language, visuals and sequencing</li> </ul>   |
| 3     | <p>The student has provided <b>evidence</b> that they:</p> <ul style="list-style-type: none"> <li>completed a scientific investigation that shows evidence of <b>careful</b> planning</li> <li>had some <b>measurable</b> aims and the subject of the investigation was <b>clearly</b> described</li> <li>collected background research with <b>some relevance</b> to the subject of investigation</li> <li>proposed a <b>relevant hypothesis</b></li> <li>had a <b>good understanding</b> of the science concepts used in the investigation</li> <li>had some <b>innovative</b> or <b>creative</b> ideas but did not develop them</li> <li>conducted a <b>risk assessment</b> prior to experimentation</li> <li>gathered primary or secondary data with <b>replication</b></li> <li>used thorough scientific methodology including the <b>control</b> of <b>variables</b></li> <li>identified <b>obvious</b> trends, patterns and relationships in the data</li> <li>formulated conclusions that were <b>supported</b> by experimental data</li> <li>provided <b>supporting</b> documentation in the accompanying logbook</li> <li>put forward some <b>good</b> and <b>practical</b> ideas for future improvements</li> <li><b>acknowledged</b> any assistance given</li> <li>communicated the report with <b>good</b> use of language, visuals and sequencing appropriate to the intended audience</li> </ul> |
| 2     | <p>The student has provided <b>evidence</b> that they:</p> <ul style="list-style-type: none"> <li>completed a scientific investigation with <b>moderate</b> planning</li> <li>had some <b>tentative</b> aims and the subject of the investigation was <b>adequately</b> described</li> <li>performed <b>limited</b> or <b>general</b> background research</li> <li>had <b>minimal</b> understanding of the science concepts used in the investigation</li> <li>lacked <b>innovative</b> or <b>creative</b> ideas</li> <li>considered <b>experimental risks</b> but did not conduct a formal <b>risk assessment</b></li> <li>gathered <b>some</b> first-hand data <b>without replication</b></li> <li><b>controlled</b> some <b>variables</b></li> <li>identified <b>limited</b> trends, patterns and relationships in the data</li> <li>formulated conclusions that were <b>not fully supported</b> by data</li> <li>provided <b>limited</b> or <b>disorganised</b> documentation in the accompanying logbook</li> <li>put forward <b>some</b> ideas for future improvements</li> <li>received some assistance but <b>did not provide details</b> of the assistance given</li> <li>communicated the report with <b>adequate</b> use of language, visuals and sequencing</li> </ul>  |
| 1     | <p>The student has provided <b>evidence</b> that they:</p> <ul style="list-style-type: none"> <li>submitted a project with <b>limited</b> planning</li> <li>had no <b>clear</b> aim and the subject of the investigation was <b>vaguely</b> described</li> <li>performed <b>nominal</b> or <b>irrelevant</b> background research</li> <li>had an <b>inadequate</b> understanding of the science concepts used in the investigation</li> <li><b>failed</b> to recognise or control <b>variables</b></li> <li><b>failed</b> to identify trends, patterns and relationships in the data</li> <li>manufactured conclusions <b>lacking</b> supporting information and scientific accuracy</li> <li><b>neglected</b> to include a logbook</li> <li><b>neglected</b> to acknowledge assistance given</li> </ul>  |

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|       | <ul style="list-style-type: none"><li>communicated the report with <b>poor expression</b> and <b>inadequate</b> use of visuals</li></ul> |