

Investigation marking guide

Depending on the investigation carried out, some marks may not be available

1. Identifying variables (AF4)	They have correctly identified one variable. (1 mark) (L3)	They have correctly identified two variables. (2 marks) (L4)	They have correctly identified the independent and dependent variables, as well as one control variable. (3 marks) (L5)	They have correctly identified the independent and dependent variables and at least two control variables. (4 marks) (L6)	
2. Method (AF4)	They have listed by name one or more of the pieces of equipment to be used in the experiment. (1 mark) (L3)	They have briefly outlined some or all of the experiment and named one or more pieces of equipment that will be used. (2 marks) (L4)	They have outlined the experiment, naming the key pieces of equipment and described what they will be used for. (3 marks) (L5)	<ul style="list-style-type: none"> · They have fully outlined the experiment in detail, naming the key pieces of equipment and described what they will be used for. · They have defined the variables by name or by giving values. (4 marks) (L6)	An additional mark can be given for each of the following: <ul style="list-style-type: none"> · They have identified if repeat experiments are appropriate, or not and explained why. (L6) · They have identified variables that are difficult to control and accounted for this in the method. (L7) · They have explained why the data collection method they have chosen is the best for giving reliable and precise results. (L8)
3. Identifying risks (AF4)	They have identified a hazard or described a risk associated with this experiment. (1 mark) (L3)	They have identified one hazard and the risk it might pose. Or They have identified a hazard and what they could do to reduce the risk. Or They have identified more than one hazard with this experiment. (2 marks) (L4)	They have identified a hazard, the risk it poses and described how they will reduce the risk. (3 marks) (L5)	They have identified more than one hazard, the risk they pose and described how they will minimise the risk. (4 marks) (L6)	An additional mark can be awarded if they have described how the method can be adapted to reduce a particular risk. (L8)
4. Collecting results (AF4)	They have made some simple observations or measurements. (1 mark) (L3)	They have made a set of measurements and recorded them in a table. (2 marks) (L4)	<ul style="list-style-type: none"> · They have made a set of measurements using suitable intervals and recorded them in an <u>appropriate</u> table. · If appropriate, they have they made repeat observations. Or <ul style="list-style-type: none"> · They have used correct units in one column. (3 marks)(L5)	<ul style="list-style-type: none"> · They have made a set of measurements using suitable intervals and recorded them in an <u>appropriate</u> table. · If appropriate, they have made repeat observations and calculated an average. Or <ul style="list-style-type: none"> · They have used correct units in both columns. (4 marks) (L6)	<ul style="list-style-type: none"> · They have made a set of measurements using suitable intervals and recorded them in an <u>appropriate</u> table. · They have made repeat observations, calculated an average. · They have used correct units in both columns. (5 marks) (L6)

5. Presenting results (AF3)	They have presented their data as a graph. (1 mark) (L3)	<ul style="list-style-type: none"> · They have presented their data as an appropriate graph. (2 marks) (L4) 	<ul style="list-style-type: none"> · It is an appropriate graph with appropriate scales. · It is drawn in pencil using a ruler. -The graph has <i>one</i> of: <ul style="list-style-type: none"> · Labelled axes. (L5) · Correct units. (L6) · Clearly labelled data sets. (L6) · Line of best fit (if appropriate). (L7) (3 marks)(L5 overall)	<ul style="list-style-type: none"> · It is an appropriate graph with appropriate scales. · It is drawn in pencil using a ruler. -The graph has <i>two</i> of: <ul style="list-style-type: none"> · Labelled axes. (L5) · Correct units. (L6) · Clearly labelled data sets. (L6) · Line of best fit (if appropriate). (L7) (4 marks) (L5 overall)	<ul style="list-style-type: none"> · It is an appropriate graph with appropriate scales. · It is drawn using a <u>sharp</u> pencil and a ruler. -The graph has <i>three</i> of: <ul style="list-style-type: none"> · Labelled axes. (L5) · Correct units. (L6) · Clearly labelled data sets. (L6) · Line of best fit (if appropriate). (L7) (5 marks) (L6 overall)	<ul style="list-style-type: none"> · It is an appropriate graph with appropriate scales. · It is drawn using a <u>sharp</u> pencil and a ruler. -The graph has: <ul style="list-style-type: none"> · Labelled axes. (L5) · Correct units. (L6) · Clearly labelled data sets. (L6) · Line of best fit. (L7) (6 marks) (L7 overall)
6. Interpreting data (AF5)	They have given a simple description of what their results show. (1 mark) (L3)	They have identified a linear (straight line) or non-linear pattern in their results. (2 marks) (L5)	They have described a quantitative (used numbers) relationship in their results. (3 marks) (L6)	An additional mark can be given for each of the following: <ul style="list-style-type: none"> · They have made a prediction based on their results. (L7) 	<ul style="list-style-type: none"> · They have identified a quantitative relationship between the variables. (L7) 	<ul style="list-style-type: none"> · They have identified more than one pattern in their results. (L8) · They have used their data in a further calculation. (L8)
7. Conclusions (AF5)	<ul style="list-style-type: none"> · They have explained their results using cause and effect. (1 mark) (L3) · They have begun to use a scientific idea or correctly used a keyword. (2 marks) (L4) 	<ul style="list-style-type: none"> · They have correctly used a scientific idea or correctly used two keywords. (3 marks) (L5) · They have begun to link two scientific ideas or correctly used three key words. (4 marks) (L6) 	<ul style="list-style-type: none"> · They have correctly linked two scientific ideas or have correctly used four keywords. (L7) (5 marks) · They have linked three or more scientific ideas or correctly used at least five keywords. (L8) (6 marks) 	An additional mark can be given for each of the following: <ul style="list-style-type: none"> · They have selected data and used it to contribute to conclusions. (L6) 	<ul style="list-style-type: none"> · They have assessed the strength of their evidence, deciding whether it is sufficient to support a conclusion. (L7) · They have explained how data can be interpreted in different ways. (L7) 	<ul style="list-style-type: none"> · They have explained how unexpected outcomes could be significant. (L7) · They have given a scientific explanation for unexpected observations or measurements. (L8)
8. Improvements (AF5)	They have suggested an improvement. (1 mark) (L3)	They have suggested an improvement and given a reason. (2 marks) (L4)	They have evaluated the effectiveness of their working methods and made practical suggestions for improving them. (3 marks) (L5)	An additional mark can be given for each of the following: <ul style="list-style-type: none"> · They have suggested reasons based on scientific knowledge and understanding for any limitations or inconsistencies in the evidence collected. (L6) 	<ul style="list-style-type: none"> · They have explained ways of modifying the method to improve reliability. (L7) 	<ul style="list-style-type: none"> · They have suggested and justified improvements to experimental procedures using detailed scientific knowledge and understanding. (L8) · They have suggested ways to take the investigation further. (L8)