



Higher
Coursework
Assessment Task



Higher Biology

Assignment

Assessment task

This document provides information for teachers and lecturers about the coursework component of this course in terms of the skills, knowledge and understanding that are assessed. It **must** be read in conjunction with the course specification.

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Introduction

This document contains instructions for teachers and lecturers, marking instructions and instructions for candidates for the Higher Biology assignment. You must read it in conjunction with the course specification.

This assignment is worth 20 marks (scaled to 30). This is 20% of the overall marks for the course assessment.

This is one of three course assessment components. The other components are question papers.

Instructions for teachers and lecturers

General information

This information applies to the assignment for Higher Biology.

The assignment assesses the application of skills of scientific inquiry and related biology knowledge and understanding.

The assignment gives candidates an opportunity to demonstrate the following skills, knowledge and understanding:

- ◆ applying knowledge of biology to new situations, interpreting information and solving problems
- ◆ planning, designing and safely carrying out experiments/practical investigations to test given hypotheses or to illustrate particular effects
- ◆ selecting information from a variety of sources
- ◆ presenting information appropriately in a variety of forms
- ◆ processing information (using calculations and units, where appropriate)
- ◆ making predictions and generalisations based on evidence/information
- ◆ drawing valid conclusions and giving explanations supported by evidence/justification
- ◆ evaluating experiments/practical investigations and suggesting improvements
- ◆ communicating findings/information effectively

The assignment offers challenge by requiring candidates to apply skills, knowledge and understanding in a context that is one or more of the following:

- ◆ unfamiliar
- ◆ familiar but investigated in greater depth
- ◆ integrating a number of familiar contexts

Candidates research and report on a topic that allows them to apply skills and knowledge in biology at a level appropriate to Higher.

The topic must be chosen with guidance from teachers and/or lecturers and must involve experimental work.

The assignment has two stages:

- ◆ research
- ◆ report

The research stage must involve experimental work that allows measurements to be made. Candidates must also gather data from the internet, books and/or journals.

Candidates must produce a report of their research.

Conditions of assessment

Setting, conducting and marking the assignment

Setting

The assignment is:

- ◆ set by centres within SQA guidelines
- ◆ set at a time appropriate to the candidate's needs
- ◆ set within teaching and learning and includes experimental work at a level appropriate to Higher

Conducting

The assignment is:

- ◆ an individually produced piece of work from each candidate
- ◆ started at an appropriate point in the course
- ◆ conducted under controlled conditions

Marking

The report is submitted to SQA for external marking.

All marking is quality assured by SQA.

Assessment conditions

Controlled assessment is designed to:

- ◆ ensure that all candidates spend approximately the same amount of time on their assignments
- ◆ prevent third parties from providing inappropriate levels of guidance and input
- ◆ mitigate concerns about plagiarism and improve the reliability and validity of SQA awards
- ◆ allow centres a reasonable degree of freedom and control
- ◆ allow candidates to produce an original piece of work

There are two levels of control.

Under a high degree of supervision and control	Under some supervision and control
<ul style="list-style-type: none"> ◆ the use of resources is tightly prescribed ◆ all candidates are within direct sight of the supervisor throughout the session(s) ◆ display materials which might provide assistance are removed or covered ◆ there is no access to e-mail, the internet or mobile phones ◆ candidates complete their work independently ◆ interaction with other candidates does not occur ◆ no assistance of any description is provided 	<ul style="list-style-type: none"> ◆ candidates do not need to be directly supervised at all times ◆ the use of resources, including the internet, is not tightly prescribed ◆ the work an individual candidate submits for assessment is their own ◆ teachers and/or lecturers can provide reasonable assistance

The assignment has two stages.

Stage	Level of control
◆ research	conducted under some supervision and control
◆ report	conducted under a high degree of supervision and control

Instructions

Teachers and/or lecturers must exercise their professional responsibility to ensure that the report submitted is the candidate's own work.

It is recommended that no more than 8 hours is spent on the **whole** assignment.

A maximum of 2 hours is allowed for the report stage.

Teachers and/or lecturers must ensure candidates understand the requirements of the task. The instructions for candidates outline the requirements for the assignment and teachers and/or lecturers must give these to candidates at the outset. These must not be altered or supplemented with centre-devised material.

It is not permitted **at any stage** to provide candidates with a template or model answers.

Research stage

The research stage is conducted under some supervision and control. See 'Conditions of assessment' section.

Choosing the topic

At the start of the research stage, the teacher and/or lecturer must agree the choice of topic with the candidate to ensure that it:

- ◆ is appropriate for Higher Biology
- ◆ has associated experimental work that can generate numerical data
- ◆ allows the candidate the opportunity to access all of the available marks

The teacher and/or lecturer must ensure that a **range** of topics is available for candidates to choose from. A range of topics means that it is acceptable for the same general topic to be investigated in a class and across classes providing that a variety of independent variables are being investigated, or a variety of experiments are being carried out, or both. This is to ensure that centres do not use a whole-class experiment.

Teachers and/or lecturers must minimise the number of candidates within a class:

- ◆ investigating the same topic
- ◆ investigating the same independent variable
- ◆ carrying out the same experiment

A range of topics chosen for investigation will create the climate in which candidates can produce original work within the conditions of assessment.

Once candidates have agreed the topic with their teacher and/or lecturer, the candidate must formulate an aim.

Formulating the aim

To ensure the candidate's aim is achievable the teacher and/or lecturer must provide advice on its **suitability**, taking into account:

- ◆ health and safety considerations
- ◆ availability of resources
- ◆ availability of data from internet/literature

Teachers and/or lecturers must not provide candidates with an aim.

After the candidate has formulated an aim, they can progress through the research stage.

The candidate's research consists of gathering data relevant to the aim from an experiment and comparative data from an internet/literature source.

The candidate's research may also involve gathering extracts from internet/literature source(s) to support their description of the underlying biology.

Candidates can carry out their research in any order. They do not have to follow the order outlined.

Experimental research

Teachers and/or lecturers can supply instructions for the experimental procedure. This must **only** be a basic list of instructions. These instructions must not include the range, number or interval of values or measurements, nor should there be any reference to repeats. Candidates must decide on these for themselves. Where there is a safety issue, a maximum value for the range can be provided.

Teachers and/or lecturers are responsible for ensuring that appropriate risk assessment has been carried out and that candidates have guidance on the safe and correct use of chemicals and equipment.

Teachers and/or lecturers must not provide candidates with experimental data.

Teachers and/or lecturers must not provide candidates with a blank or pre-populated table for experimental results.

Candidates must carry out the experimental work individually or as part of a small group. (A small group is defined as having two, three or four candidates.)

Group work may be an appropriate approach in a number of circumstances, for example:

- ◆ to encourage diversity of research topic
- ◆ where experimental work is labour- or time-intensive
- ◆ where resources are limited

Where candidates work in a group, teachers and/or lecturers must ensure every candidate participates in the experimental work. Within the small group, it is acceptable for candidates to share experimental data, but experimental data must not be shared between groups. Where candidates in a small group have the same raw data, any calculations and analysis must be done individually.

Teachers and/or lecturers must not provide feedback to candidates on their results. However, where **candidates** identify a problem with their results and indicate that they wish to repeat the experimental work, candidates may do so.

Internet/literature research

The internet/literature research must be the work of the individual candidate; candidates cannot work in a group to carry out this research.

Candidates may carry out research to find comparative data and underlying biology outwith the direct supervision of teachers and/or lecturers.

Candidates must undertake research using only websites, journals and/or books to find secondary data.

Candidates must not have access to lists of potential sources of comparative data or lists of sources of extracts to support their description of the underlying biology. Candidates must not be directed to specific websites, journals or textbooks. Candidates must not be provided with whole articles or extracts from websites, journals or textbooks, selected by a third party.

Candidates must find internet/literature data that they can compare to their experimental data and record the reference to the source.

This can be data that:

- ◆ matches the sample range and units used to measure the independent variable
- ◆ is not an exact match for the sample range and/or the units used to measure the independent variable
- ◆ is generic and illustrates a trend or pattern between the variables in the experimental data

The data can either support or contradict the experimental data.

Teachers and/or lecturers must not provide candidates with feedback on their research.

Report stage

The report stage is conducted under a high degree of supervision and control. See 'Conditions of assessment' section.

Candidates must be given a maximum of 2 hours to produce the report.

- ◆ This can be a continuous period of time or split over a number of successive subject lessons.
- ◆ Centres are responsible for ensuring that candidates are given no more than the maximum time.
- ◆ If the report is produced over a number of successive lessons, then the teacher or lecturer must retain candidates' work and store it securely between lessons to ensure that candidates do not add any additional materials to those they had at the start of the report stage. Teachers and lecturers must not provide any additional teaching or coaching in relation to the assignments between reporting sessions.

Candidates may word-process their reports and use appropriate software to produce graphs – providing that the assessment conditions are met.

Teachers and/or lecturers must check that all materials (in any format) that each and every candidate will use in the report stage fit the following criteria.

The **only** materials that can be used in the report stage are:

- ◆ the instructions for candidates, which must not have been altered
- ◆ the candidate's raw experimental data, which may be tabulated, however must not have additional blank or pre-populated columns for mean and derived values
- ◆ data taken from the internet or literature, which must not include sample calculations
- ◆ a record of the source(s) of internet or literature data
- ◆ the instructions used for the experimental procedure
- ◆ extract(s) from internet/literature source(s) to support the underlying biology, which must not include sample calculations

An extract must be:

- ◆ chosen by the candidate – they must select what information to extract
- ◆ verbatim – it must be a direct copy, which can be a printout, photocopy or handwritten (and word for word)
- ◆ from an internet/literature source – not from centre-devised course material or class notes. Candidate notes of any description are not permitted
- ◆ checked by the teacher or lecturer to ensure that it is an extract (unannotated), and not notes or a draft

There is no size limit on an extract; however, it must be an extract and not the full document.

Candidates must not have access to a previously prepared draft of a report or any part of a report.

In addition, candidates **must not** have access to the assignment marking instructions during the report stage.

Candidates **must not** have access to the internet during the report stage.

Teachers and/or lecturers must not provide any form of feedback to a candidate on their report.

Following completion of the report stage candidates must not be given an opportunity to redraft their report.

Teachers and/or lecturers must not read the reports before they are submitted to SQA.

Evidence to be gathered

The following candidate evidence is required for this assessment:

- ◆ a report

The report is submitted to SQA, within a given time frame, for marking.

The same report cannot be submitted for more than one subject.

Marking instructions

In line with SQA's normal practice, the following marking instructions for the Higher Biology assignment are addressed to the marker. They will also be helpful for those preparing candidates for course assessment.

Candidates' evidence is submitted to SQA for external marking.

General marking principles

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.

Detailed marking instructions

Read the whole report before you assign any marks.

Section	Max mark	Expected response and marking instructions
1 Aim (1 mark)		
	1	<p>An aim that describes clearly the purpose of the investigation.</p> <p>The word 'aim' is not required, but the statement of the aim should be separate from the title.</p> <p>Acceptable versions of an aim could be:</p> <ul style="list-style-type: none">◆ 'To investigate the effect of lead concentration on the activity of the enzyme catechol oxidase.'◆ 'To investigate the effect of UV radiation exposure time on the growth of UV-sensitive yeast cells.' <p>Note: the following aims would not be acceptable:</p> <ul style="list-style-type: none">◆ 'To investigate the effect of lead nitrate on enzyme activity' (independent variable too vague).◆ 'To investigate the effect of lead nitrate concentration on catalase' (dependent variable too vague).

Section	Max mark	Expected response and marking instructions
2 Underlying biology (4 marks)		
	4	<p>An account of biology relevant to the aim of the investigation.</p> <p>Award marks for expanded descriptions and explanations at Higher level.</p> <p>The candidate must use biology terms/ideas at a depth appropriate to at least Higher level.</p> <p>Four relevant points, award 4 marks. Three relevant points, award 3 marks. Two relevant points, award 2 marks. One relevant point, award 1 mark.</p> <p>Ideally, the candidate will give their account of the underlying biology in this section of the report; however, you should be aware that they may include some of the underlying biology in other sections of the report.</p> <p>Information quoted from references in this section and then explained or expanded on by the candidate is acceptable.</p> <p>Only award marks for underlying biology. Do not award marks for general information, for example historical or socio-economic information.</p>

Section	Max mark	Expected response and marking instructions
3 Data collection and handling (5 marks)		
3 a	1	<p>A brief summary of the approach used to collect experimental data.</p> <p>Where the candidate has not demonstrated the ability to summarise the procedure, do not award the mark.</p> <p>The summary need only be in sufficient detail that the nature of the experiment can be visualised. The candidate must name any chemical(s) used and the equipment used to measure the dependent variable.</p> <p>The candidate should not include excessive details in the summary.</p> <p>A diagram on its own is insufficient to gain this mark.</p> <p>Acceptable summaries of practical work could be:</p> <ul style="list-style-type: none"> ◆ ‘Six beakers were set up with different concentrations of hydrogen peroxide. Filter paper discs were soaked in catalase solution. One disc was dropped to the bottom of the first beaker and a stop clock used to time how long it took to rise to the surface. This was repeated for each concentration.’ ◆ ‘Five woodlice were placed in a sealed flask that was fitted with a carbon dioxide probe. The flask was placed in a water bath at 5 °C and left for 10 minutes. Then the probe was used to record the CO₂. This was repeated at four other temperatures.’

Section	Max mark	Expected response and marking instructions
3 b	1	<p>Sufficient raw data from the candidate's experiment.</p> <p>Repeated measurements must be included.</p> <p>The number and range of values must be appropriate to the aim. A minimum of three values will be appropriate in some investigations; however, the number will depend upon the aim of the investigation.</p> <p>For example:</p> <ul style="list-style-type: none"> ◆ In an experiment to investigate the effect of end product inhibition of phosphatase, five different phosphate concentrations would be appropriate over the range of molarities: 0, 0.05M, 0.10M, 0.20M, 0.30M. ◆ In an experiment to investigate how using different respiratory substrates affects dehydrogenase activity in yeast, three substrates would be sufficient, for example glucose, maltose and lactose. <p>In this section, do not penalise errors in presentation of the data, such as missing headings or missing units from tables.</p> <p>Award this mark for raw, unprocessed data and not the mean/average values calculated from raw data.</p>
3 c	1	<p>Data, including mean/average values, presented in a correctly produced table(s).</p> <p>Experimental data must be tabulated.</p> <p>Every column must have a clear heading.</p> <p>Units must be indicated in column headings or given after every data entry.</p> <p>All mean/average values must be calculated correctly and tabulated.</p>

Section	Max mark	Expected response and marking instructions								
3 d	1	<p>Data relevant to the aim from an internet/literature source.</p> <p>Where the relevance of the data is not clear, a statement must be included to indicate how this relates to the aim. This statement can be anywhere in the report.</p>								
3 e	1	<p>A citation and reference for a source of internet/literature data.</p> <p>The candidate must cite the internet/literature source within the body of the report and only give the reference later in the report (not beside the data).</p> <table border="1"> <thead> <tr> <th>Source</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Website</td> <td>Full URL for the page(s) with date accessed The URL 'www.bbc.co.uk (Feb 2018)' is not acceptable, but http://www.bbc.co.uk/education/guides/z46cwmn/revision (Feb 2018) is an acceptable reference.</td> </tr> <tr> <td>Journal</td> <td>Title, author, journal title, volume and page number</td> </tr> <tr> <td>Book</td> <td>Title, author, page number and either edition or ISBN</td> </tr> </tbody> </table> <p>The reference must be to the source of data relevant to the aim.</p>	Source	Reference	Website	Full URL for the page(s) with date accessed The URL 'www.bbc.co.uk (Feb 2018)' is not acceptable, but http://www.bbc.co.uk/education/guides/z46cwmn/revision (Feb 2018) is an acceptable reference.	Journal	Title, author, journal title, volume and page number	Book	Title, author, page number and either edition or ISBN
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Book	Title, author, page number and either edition or ISBN									

Section	Max mark	Expected response and marking instructions
4 Graphical presentation (4 marks)		
		<p>The candidate's graph must be based on their own experimental data.</p> <p>Mark computer-generated graphs in the same way as hand-drawn graphs. These must have major and minor gridlines.</p> <p>Graphs should be of a size that allows the scaling and labelling of the axes and the accuracy of the plotting of the data points to be readily checked.</p>
4 a	1	<p>An appropriate format from the options of bar graph or line graph.</p> <p>The candidate should select a bar graph for a discrete variable and a line graph for a continuous variable.</p>
4 b	1	<p>The axes of the graph have suitable scales.</p> <p>If the candidate produces a bar graph, then consider bar labels here in place of scale.</p>
4 c	1	<p>The axes of the graph have suitable labels and units.</p> <p>Do not penalise spelling mistakes or the use of abbreviations if the meaning of an axis label can be clearly understood within the context of the investigation.</p> <p>Appropriate abbreviations may be used for units.</p>
4 d	1	<p>Accurately plotted data points and a line (line graph) or clear bar tops (bar graph).</p> <p>Do not award this mark if it is not possible to check the accuracy of plotting. It may not be possible to check the accuracy of plotting if data points are excessively large.</p>

Section	Max mark	Expected response and marking instructions
5 Analysis (1 mark)		
	1	<p>A valid comparison or an appropriate calculation linked to the aim of the investigation.</p> <p>This could be:</p> <ul style="list-style-type: none"> ◆ a comparison of the experimental data with the data from the internet/literature source <p>OR</p> <ul style="list-style-type: none"> ◆ a correctly completed calculation(s) based on the experimental data, along with a statement(s) linking the result of the calculation(s) to the aim of the investigation <p>This must be a calculation other than the mean or average values that have already been marked in section 3 c.</p> <p>Do not award this mark for calculations without a linking statement.</p>
6 Conclusion (1 mark)		
	1	<p>A valid conclusion that relates to the aim and is supported by all the data in the report.</p> <p>Where the candidate has used an indirect measurement, they must refer to the dependent variable stated in the aim and not only to the indirect measurement.</p>

Section	Max mark	Expected response and marking instructions
7 Evaluation (3 marks)		
	3	<p>Evaluation of the investigation</p> <p>Award 1 mark for each valid evaluative statement supported by appropriate justification, to a maximum of 3 marks.</p> <p>The evaluative statements could relate to the experimental procedures, results or data from an internet/literature source.</p> <p>A maximum of one of these marks is available for an evaluation of data from an internet/literature source.</p> <p>Where the terms ‘accurate’, ‘valid’ or ‘reliable’ are used, they must be used correctly.</p>
8 Structure (1 mark)		
	1	<p>A clear and concise report, with an informative title.</p> <p>The structure of the report does not need to follow the structure suggested in the marking instructions or instructions for candidates, but should flow in a logical manner.</p> <p>Note: ‘Higher Biology assignment’ alone is not acceptable.</p>
Total	20	

Instructions for candidates

This assessment applies to the assignment for Higher Biology.

This assignment is worth 20 marks. This is 20% of the overall marks for the course assessment.

It assesses the following skills, knowledge and understanding:

- ◆ applying knowledge of biology to new situations, interpreting information and solving problems
- ◆ planning, designing and safely carrying out experiments/practical investigations to test given hypotheses or to illustrate particular effects
- ◆ selecting information from a variety of sources
- ◆ presenting information appropriately in a variety of forms
- ◆ processing information (using calculations and units, where appropriate)
- ◆ making predictions and generalisations based on evidence/information
- ◆ drawing valid conclusions and giving explanations supported by evidence/justification
- ◆ evaluating experiments/practical investigations and suggesting improvements
- ◆ communicating findings/information effectively

Your assignment has two stages:

- ◆ research
- ◆ report

Your teacher or lecturer will let you know if there are any specific conditions for doing this assessment and tell you how the assignment will be carried out.

In this assignment you have to investigate a topic in biology by doing research.

Your research involves gathering data from an experiment and data from internet/literature source(s).

You then produce a report on your investigation.

Your teacher or lecturer will not mark your report at any point. It is sent to SQA for marking.

Research stage

Choosing your topic

- ◆ You need to choose a relevant topic in biology to investigate.
- ◆ You must agree your topic with your teacher or lecturer.

Deciding your aim

- ◆ Once you have chosen your topic, you need to decide on the aim of your investigation. Remember that you need to do an experiment **and** find data to compare with your experimental results.
- ◆ Your teacher or lecturer will provide advice on the suitability of your aim, in terms of safety and availability of resources. They will not assess your aim.

Experimental research

- ◆ When choosing your experiment, remember it must allow measurements to be taken.
- ◆ When carrying out your experiment, you must work either on your own or as part of a small group. If you are working as part of a small group, you must take an active part.
- ◆ Make sure you use a sufficient number of values over a wide enough range to meet the aim of your investigation.
- ◆ You must have repeat measurements.
- ◆ Your raw experimental data may be tabulated; however, tables must not have additional blank or pre-populated columns for mean and derived values.
- ◆ You will use your raw experimental data during the report stage.

Internet/literature research

You must carry out your own internet/literature research.

- ◆ You need to find data from the internet, books and/or journals that you can compare to your experimental data. This should be a table or a graph and be relevant to your aim. This data can:
 - match the sample range and units used to measure the independent variable in your experiment
 - have a similar/different range of values from the sample range used to measure the independent variable in your experiment
 - have different units from those used to measure the independent variable in your experiment
 - be generic and illustrates a trend or pattern between the variables in your experimental data
- ◆ It is important that you record where you get your data from in enough detail that another person could find it. This is known as a reference.
- ◆ In your report you will need to describe the biology relevant to your aim. You can gather extracts from the internet, books and/or journals to help you write your description of the underlying biology. An extract must be from an internet/literature source – not from centre-devised course material or class notes. It must be a direct

copy, which can be a printout, photocopy or handwritten (word for word) and must not be annotated. There is no size limit on an extract; however, it must be an extract and not the full document.

- ◆ During the report stage, you will need to show your understanding by writing your description of the biology relevant to your aim using your own words.

Report stage

Producing the report

- ◆ The report must be all your own work.
- ◆ When producing your report, you will be supervised at all times.
- ◆ You have 2 hours to complete your report.

Resources

During the report stage, you are only allowed to have certain materials.

You can have:	You cannot have:
<ul style="list-style-type: none">◆ these instructions for candidates◆ extracts you have gathered from the internet, books and/or journals to help you describe the biology relevant to your aim◆ the experimental procedure◆ your raw experimental data, which may be tabulated◆ your internet or literature data◆ the reference to the source of this data	<ul style="list-style-type: none">◆ a draft of your report◆ a draft of any part of your report◆ sample calculations from any source◆ a table containing additional blank or pre-populated columns for mean and derived values

Your teacher or lecturer cannot provide you with feedback or tell you how to improve your report.

Guidance on producing your report

Your report must be easy to follow.

You may find that using headings will help to make your report clear.

Title

- ◆ Your title must tell the reader what your report is about.

Aim

- ◆ Your aim must describe the purpose of your investigation. It should refer to both the independent and dependent variables and clearly state what aspect of each is being changed/measured.

Underlying biology

- ◆ You must describe the biology relevant to your aim. You need a minimum of four points along with their descriptions or explanations at Higher level.
- ◆ You must use your own words as much as possible.
- ◆ You can quote from extracts as long as you also give a description or explanation, in your own words, showing that you understand the biology.
- ◆ Other than quoting from your extracts, you must not copy directly from them. Copying directly from your extracts would not show that you understand the biology.

Description of experiment

- ◆ You must give only a brief description that shows you can summarise your experimental procedure. You must not give a full description/set of instructions and avoid giving too much detail. Details such as the range, number or interval of values or measurements, or information about repeats are not required.
- ◆ Your summary must include the names of any chemicals used and the equipment you used to measure the dependent variable.

Experimental data

- ◆ You must include a table showing **all** of the measurements you recorded during your experiment.
- ◆ Make sure you include column headings. You must also include units, where appropriate.
- ◆ You must calculate average values from your repeated measurements and include these in your table.

Graphical presentation

- ◆ You must produce a graph of your experimental results.
- ◆ The graph must:
 - be a line graph or a bar graph, whichever is appropriate for your data
 - be large enough to allow points to be read accurately
 - have suitable scales, labels and units on the axes
 - have points that are joined with a line (line graph) or clear bar tops (bar graph)
- ◆ You must use graph paper or graphing software.
- ◆ If you are using graphing software, you must include both major and minor gridlines, and use plotting symbols that are clear but not too large.

Data from an internet/literature source

- ◆ You must include data from an internet/literature source that you can compare with the data from your experiment. It must be clear from what you include that this data is relevant to the aim of your investigation. It might be necessary for you to include a statement to explain its relevance.
- ◆ You must cite your internet/literature source within the body of the report, near to the relevant data.
- ◆ You can cite a source in many ways. One way is to put a number, for example (1), next to the data and the same number beside the reference included later in the report. A URL cannot be a citation.
- ◆ You must include a reference to the same source later in the report.
- ◆ You must include the following information in a reference:

Source	Reference
website	full URL for the page or pages, with date accessed
journal	title, author, journal title, volume and page number
book	title, author, page number and either edition or ISBN

Analysis

There are two ways to approach this:

1. You can compare your experimental data with the data from your internet/literature source. You must state the values (with units) of the independent variable that you are using in your comparison. However, if the data from your internet/literature source is generic this approach is not appropriate, as it lacks the values needed to compare it to your experimental data.

OR

2. You can include a correctly completed calculation(s) based on your experimental data, stating the values (with units) of the independent variable you are using. This calculation must not be an average. You must include a statement to link the result of the calculation(s) to the aim of the investigation.

Conclusion

You must state a conclusion that relates to your aim **and** is supported by **all** the data included in your report. This must not be a restatement of results.

Evaluation

You must make three statements, **supported by justifications**, which evaluate the data you have included.

These statements can relate to:

- ◆ aspects of your experimental procedure, such as controls, variables, errors and potential improvements
- ◆ variation in your results
- ◆ the data from your internet/literature source (not the source itself)

No more than one of your statements can evaluate data from your internet/literature source.

Summary

You can use this table to check you have covered all the sections in your report.

Section	Description	Marks
Title and structure	An informative title and a structure that can be easily followed.	1
Aim	A description of the purpose of your investigation.	1
Underlying biology	A description of the biology relevant to your aim, which shows your understanding.	4
Data collection and handling	A brief description of your experiment.	1
	Sufficient data from your experiment.	1
	Data from your experiment, including average values, presented in a table with headings and units.	1
	Data from an internet/literature source.	1
	A citation for an internet/literature source and the reference later in the report.	1
Graphical presentation	Appropriate type of graph used to present your experimental data.	1
	Suitable scales.	1
	Suitable labels and units on axes.	1
	All data plotted accurately.	1
Analysis	A correct comparison of the experimental data with data from the internet/literature source OR a correctly completed calculation(s) based on the experimental data, linked to the aim.	1
Conclusion	A conclusion relating to your aim, based on all the data in your report.	1
Evaluation	Three evaluative statements supported by justifications.	3
Total		20

Once complete, give your report to your teacher or lecturer to submit to SQA.

Administrative information

Published: June 2020 (version 3.0)

History of changes

Version	Description of change	Date
2.0	<p>‘Instructions for teachers and lecturers’ and ‘Instructions for candidates’ sections: assignment assessment conditions clarified throughout.</p> <p>‘Marking instructions’ section: clarifications throughout, based on 2018-19 exam diet.</p>	September 2019
3.0	<p>Minor amendments to wording throughout the ‘Instructions for teachers and lecturers’ and ‘Instructions for candidates’ sections for clarification and consistency.</p> <p>All references to ‘data/information’ changed to ‘data’ as candidates must use data for a comparison at Higher level.</p> <p>‘Instructions for teachers and lecturers’ specific sections updated as follows:</p> <ul style="list-style-type: none">◆ ‘Choosing the topic’ sub-section:<ul style="list-style-type: none">— information added to clarify what is meant by a range of topics◆ ‘Experimental research’ sub-section:<ul style="list-style-type: none">— information added to clarify that calculations and analysis must be done individually◆ ‘Internet/literature research’ sub-section:<ul style="list-style-type: none">— teachers and lecturers are no longer permitted to provide a list of potential sources of comparative data or lists of sources of extracts to support a candidate’s description of the underlying biology. Candidates must not be directed to specific sources or provided with articles or extracts from sources.	June 2020

	<ul style="list-style-type: none"> — information added to clarify the types of data that candidates can compare to their experimental data — removed reference to ‘directly’ as candidates are not required to do a direct comparison ◆ ‘Report stage’ sub-section: <ul style="list-style-type: none"> — clarification added that where reports are being produced over successive lessons, candidates must not add additional materials between reporting sessions. Teachers and lecturers must not provide additional teaching or coaching in relation to assignments between sessions. — clarification added that it is the same set of instructions for the experimental/fieldwork procedure that can be used during the report stage <p>‘Instructions for candidates’ specific sections updated as follows:</p> <ul style="list-style-type: none"> ◆ ‘Internet/literature research’ sub-section: <ul style="list-style-type: none"> — information added to clarify the types of data that candidates can compare to their experimental data ◆ ‘Underlying Biology’ sub-section: <ul style="list-style-type: none"> — clarification added about quoting and copying from sources ◆ ‘Analysis’ sub-section: <ul style="list-style-type: none"> — clarification added on ways to approach the analysis 	

Note: you are advised to check SQA’s website to ensure you are using the most up-to-date version of this document.

Security and confidentiality

This document can be used by SQA approved centres for the assessment of National Courses and not for any other purpose.

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