

The logo consists of the letters 'N5' in a large, bold, white font, set against a solid purple square background.

National 5
Coursework
Assessment Task



National 5 Biology Assignment Assessment task

Valid from session 2019-20 and until further notice.

This edition: September 2019 (version 3.0)

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Introduction

This document contains instructions for teachers and lecturers, marking instructions and instructions for candidates for the National 5 Biology assignment. It must be read in conjunction with the course specification.

This assignment is worth 20 marks (scaled to 25). The marks contribute 20% of the overall marks for the course assessment.

This is one of two course assessment components. The other component is a question paper.

Instructions for teachers and lecturers

General information

This information applies to the assignment for National 5 Biology.

The purpose of the assignment is to assess 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 experimental/fieldwork 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
- ◆ suggesting improvements to experimental/fieldwork investigations
- ◆ communicating findings/information

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

- ◆ unfamiliar
- ◆ familiar but investigated in greater depth
- ◆ integrates 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 National 5.

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

The assignment has two stages:

- ◆ research
- ◆ report

The research stage must involve an experiment/fieldwork that allows measurements to be made. Candidates must also gather data/information from the internet, books and/or journals to compare against their experimental/fieldwork results. The candidate's research may also involve gathering extracts from internet/literature sources to support their descriptions and/or explanations of the underlying biology.

Candidates must produce a report on their research.

Assessment should take place when candidates are ready to be assessed. It is not advisable to undertake the assignment too early, as it is important that candidates are adequately prepared in the skills needed to undertake all parts of the assignment.

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 candidates' needs
- ◆ set within teaching and learning and includes experimental work/fieldwork at a level appropriate to National 5

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.

Controlled 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 that 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 lecturers can provide reasonable assistance

The assignment has two stages.

Stage	Level of control
<ul style="list-style-type: none"> ◆ research 	conducted under some supervision and control
<ul style="list-style-type: none"> ◆ report 	conducted under a high degree of supervision and control

Instructions

Teachers and 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 1 hour and 30 minutes 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 must be issued to candidates at the outset. These must not be altered or supplemented with centre-devised material.

Teachers and/or lecturers must not, **at any stage**, 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

The teacher and/or lecturer must ensure that a **range** of topics is available for candidates to choose from.

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

- ◆ is commensurate with National 5 Biology
- ◆ has associated experimental work/fieldwork that can generate numerical data
- ◆ will allow candidates the opportunity to access all of the available marks

Teachers and/or lecturers must minimise the number of candidates investigating the same topic within a class.

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

Once the topic has been agreed, the candidate must formulate an aim.

Formulating the aim

The teacher or lecturer must provide advice on the suitability of the candidate's aim, taking into account the factors below:

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

Any advice on the suitability of an aim is only to ensure that it is achievable, taking into account the factors identified above.

Teachers and lecturers are **not** permitted to provide an aim.

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

The order in which the research is carried out need not be in the order outlined below.

Experimental/fieldwork research

Teachers and lecturers can supply instructions for the experimental/fieldwork procedure. This must **only** be a basic list of instructions. These instructions must not include details of the number and range of values or 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.

It is the responsibility of teachers and lecturers to ensure that appropriate risk assessment has been carried out and to provide guidance on the safe and correct use of chemicals and equipment.

Teachers and lecturers must not provide candidates with a set of experimental/fieldwork data.

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

The experimental work/fieldwork must be carried out either 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/fieldwork is labour- or time-intensive
- ◆ where resources are limited

Where group work is undertaken, teachers and lecturers must ensure every candidate participates in the experimental work/fieldwork. Within the small group, it is acceptable for candidates to share experimental/fieldwork data, but experimental/fieldwork 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.

A teacher or lecturer 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/fieldwork, 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/information and information on underlying biology outwith the direct supervision of teachers or lecturers.

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

Candidates should aim to find internet/literature data to compare against their experimental/fieldwork data and record the reference to the source.

This can be data that:

- ◆ matches the sample range used
- ◆ is not an exact match for the sample range used
- ◆ is generic and illustrates a trend or pattern expected in the experimental/fieldwork data

Where it is not possible to find such data, candidates should aim to find information that may:

- ◆ directly support the experimental/fieldwork data
- ◆ be in contrast to the experimental/fieldwork data

In circumstances where there is difficulty locating secondary data/information, teachers and/or lecturers may provide candidates with a wide list of URLs and/or a wide range of books and/or journals. (A wide list is specified as a minimum of six.) This list must have a sufficient range of sources to allow candidates to make decisions about which data/information is relevant.

Only where internet access is an issue, teachers and/or lecturers can provide candidates with a printed copy of the **full** content of **all** URLs given in the list.

Teachers and lecturers must ensure that the level of demand of the research task is the same for all candidates irrespective of the approach taken.

Teachers and lecturers must not provide candidates with a set of experimental/fieldwork data to compare with candidates' own data.

Teachers and lecturers must not provide feedback to candidates 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 1 hour and 30 minutes to produce the report.

- ◆ This can be a continuous period of time or split over a number of successive subject lessons.
- ◆ It is the responsibility of the centre to ensure candidates are given no more than the maximum time.
- ◆ If the report is produced over a number of lessons, then the teacher or lecturer must retain candidates' work and store it securely between lessons.

Reports can be word-processed and graphs may be produced using appropriate software packages, provided that the assessment conditions are met.

The teacher or lecturer must check that the materials (in any format) to be used by each and every candidate in the report stage fit the criteria below.

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/fieldwork data, which may be tabulated, however must not have additional blank or pre-populated columns for average and derived values
- ◆ comparative data/information from the internet or literature, which must not include sample calculations
- ◆ a record of the source of the comparative data/information
- ◆ the experimental/fieldwork method, if appropriate
- ◆ 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 lecturers **must not** read the reports or provide any form of feedback to candidates during the report stage.

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

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 National 5 Biology assignment are addressed to the external 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.

Read the whole report before assigning any marks.

Credit should be given for appropriate information wherever it is given in the report.

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 temperature on the activity of an enzyme’ ◆ ‘to investigate the effect of light intensity on the rate of photosynthesis’ <p>Note: ‘enzymes and temperature’ or ‘enzymes’ alone or ‘to investigate limiting factors’ would not be acceptable.</p>

Section	Max mark	Expected response and marking instructions
2 Underlying biology (3 marks)		
	3	<p>An account of biology relevant to the aim of the investigation.</p> <p>Marks are awarded for expanded descriptions and explanations at National 5 level.</p> <p>Candidates must use biology terms/ideas at a depth appropriate to National 5 Biology.</p> <ul style="list-style-type: none"> ◆ three relevant points: 3 marks ◆ two relevant points: 2 marks ◆ one relevant point: 1 mark <p>Ideally, the underlying biology would be within one section of the report, however markers should be aware that candidates may include the underlying biology throughout the report.</p> <p>Information quoted from references in this section and then explained or expanded on by candidates is acceptable.</p> <p>Credit should only be given for underlying biology not general information, eg historical or socio-economic.</p> <p>Note: the simple statement ‘enzymes are biological catalysts’ would not be sufficient, as it is not an expanded description or explanation. To be awarded a mark, the candidate would need to add more information to show they have an understanding of this statement.</p>

Section	Max mark	Expected response and marking instructions
3 Data collection and handling (6 marks)		
3(a)	1	<p>A brief description of the approach used to collect experimental/fieldwork data.</p> <p>The description need only include sufficient detail for a marker to be able to visualise the nature of the experiment. Details, such as the concentrations and volumes of solutions, do not need to be included in the description.</p> <p>A diagram on its own is insufficient to gain this mark.</p> <p>Where the candidate has not demonstrated the ability to summarise the method, for example if only a full procedure is provided, the mark should not be awarded.</p> <p>Acceptable descriptions of an experimental/fieldwork approach would include:</p> <ul style="list-style-type: none"> ◆ ‘Different concentrations of nitrate solutions were added to beakers of pond water and after a week, the transmission of light through the pond water was measured.’ ◆ ‘Filter paper discs were soaked in five different vegetable juices. I dropped each one into a test tube of hydrogen peroxide and timed how long it took to rise to the surface.’ ◆ ‘The abundance of dandelions was counted at several points along a transect line and the soil moisture measured at each point.’

Section	Max mark	Expected response and marking instructions
3(b)	1	<p>Sufficient raw data from the candidate's experimental work/fieldwork.</p> <p>Where appropriate, repeated measurements must be included.</p> <p>The number and range of values must be appropriate to the aim. While a minimum of three values will be appropriate in some investigations, the number will depend on the aim of the investigation. For example:</p> <ul style="list-style-type: none"> ◆ In an experiment investigating enzyme activity, three temperatures over an appropriate range would be acceptable. ◆ In fieldwork involving the use of quadrats, three values would be insufficient. <p>Errors in the presentation of the data, such as missing headings or units from tables are not penalised in this section.</p> <p>This mark is awarded for raw, unprocessed data and not mean or derived values calculated from raw data.</p>

Section	Max mark	Expected response and marking instructions
3(c)	1	<p>Data presented in a correctly produced table.</p> <p>Experimental/fieldwork data must be tabulated with correct headings and units of measurement.</p> <p>Every column in the table must have a clear heading.</p> <p>Units must be indicated in the heading of the columns or given after every data entry.</p>
3(d)	1	<p>Mean and/or derived values calculated correctly.</p> <p>Mean and derived values must be based on the candidate's experimental/fieldwork data.</p>
3(e)	1	<p>Data/information relevant to the aim from an internet/literature source.</p> <p>This could be data that:</p> <ul style="list-style-type: none"> ◆ matches the sample range used in the experimental/fieldwork data ◆ is not an exact match for the sample range ◆ is generic and illustrates a trend or pattern expected in the experimental/fieldwork data <p>If it is not obvious why the data included is relevant to the aim, supporting information or a statement must be given to indicate the link.</p> <p>Where information is provided rather than data, this could directly support or be in contrast to the experimental/fieldwork data.</p>

Section	Max mark	Expected response and marking instructions								
3(f)	1	<p>A reference for the source of the internet/literature data or information.</p> <p>A reference to the source of the internet/literature data or information must be given in sufficient detail to allow it to be retrieved by a third party.</p> <p>The reference must appear beside the internet/literature data or information or be cited and referenced later in the report.</p> <table border="1" data-bbox="707 683 1848 951"> <thead> <tr> <th data-bbox="707 683 938 722">Source</th> <th data-bbox="938 683 1848 722">Reference</th> </tr> </thead> <tbody> <tr> <td data-bbox="707 722 938 874">website</td> <td data-bbox="938 722 1848 874">full URL for the page or pages, ie the URL 'www.bbc.co.uk' is not acceptable, but http://www.bbc.co.uk/education/guides/z46cwmn/revision is an acceptable reference</td> </tr> <tr> <td data-bbox="707 874 938 914">journal</td> <td data-bbox="938 874 1848 914">title, author, journal title, volume and page number</td> </tr> <tr> <td data-bbox="707 914 938 951">book</td> <td data-bbox="938 914 1848 951">title, author, page number and either edition or ISBN</td> </tr> </tbody> </table>	Source	Reference	website	full URL for the page or pages, ie the URL 'www.bbc.co.uk' is not acceptable, but http://www.bbc.co.uk/education/guides/z46cwmn/revision is an acceptable reference	journal	title, author, journal title, volume and page number	book	title, author, page number and either edition or ISBN
Source	Reference									
website	full URL for the page or pages, ie the URL 'www.bbc.co.uk' is not acceptable, but http://www.bbc.co.uk/education/guides/z46cwmn/revision is an acceptable reference									
journal	title, author, journal title, volume and page number									
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/fieldwork data.</p> <p>Computer-generated graphs are marked in the same way as hand-drawn graphs.</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> <p>It may not be possible to check the accuracy of plotting if data points are excessively large, minor gridlines are omitted or graph paper has not been used.</p>
4(a)	1	<p>An appropriate format from the options of bar graph or line graph.</p> <p>A bar graph should be selected 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 a bar graph is produced, then bar labels are considered in place of scale.</p>

Section	Max mark	Expected response and marking instructions
4(c)	1	<p>The axes of the graph have suitable labels and units.</p> <p>Spelling mistakes or the use of abbreviations must not be penalised if the meaning of an axis label can be clearly understood within the context of the investigation.</p>
4(d)	1	<p>Accurately plotted data points and a line (line graph) or clear bar tops (bar graph).</p> <p>If it is not possible to check the accuracy of plotting, this mark must not be awarded.</p>
5 Analysis (1 mark)		
	1	<p>A valid comparison of the experimental/fieldwork data with data/information from the internet/literature source.</p> <p>For a valid comparison to be made, it should include both similarities and differences between the experimental/fieldwork data and the data/information from the internet/literature source (where they exist).</p>

Section	Max mark	Expected response and marking instructions
6 Conclusion (1 mark)		
	1	<p>A valid conclusion that relates to the aim and is supported by all the data/information in the report.</p> <p>If the candidate has stated multiple aims then the conclusion must relate to all of the aims.</p> <p>Where no aim has been stated, this mark cannot be awarded.</p>
7 Evaluation (2 marks)		
	2	<p>An evaluation of the experimental/fieldwork procedure.</p> <p>1 mark should be awarded for identifying a factor that can be expected to have a significant effect on the validity, reliability or accuracy of the experimental work/fieldwork.</p> <p>1 mark should be awarded for an explanation of:</p> <ul style="list-style-type: none"> ◆ what could have been done to minimise the effect of the identified factor or ◆ what was done to minimise the effect of the identified factor or ◆ the evidence supporting the identification of the factor

Section	Max mark	Expected response and marking instructions
		<p>Acceptable versions of an evaluation awarded 2 marks could be:</p> <p>In an experiment on osmosis: ‘My potato pieces still had sucrose solution on them when I weighed them.’ (1) ‘I should have dried them using a paper towel before I weighed them.’ (1)</p> <p>In an experiment on transpiration: ‘It was important that the surface area for the water to evaporate from was the same.’ (1) ‘To do this I used the same plant each time.’ (1)</p> <p>In an experiment on fertilisers and algal growth: ‘I noticed that my first set of results had a lower absorbance than the other two.’ (1) ‘I think this might be because I didn’t stir the beakers.’ (1)</p>

Section	Max mark	Expected response and marking instructions
8 Structure (2 marks)		
8(a)	1	<p>An informative title.</p> <p>This should not be a restatement of the aim.</p>
8(b)	1	<p>A clear and concise report.</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>
Total	20	

Instructions for candidates

These instructions apply to the assignment for National 5 Biology.

This assignment is worth 20 marks. The marks contribute 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 experimental/fieldwork 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
- ◆ suggesting improvements to experimental/fieldwork investigations
- ◆ communicating findings/information

Your teacher or lecturer will tell you how the assignment will be carried out and any required conditions for doing it.

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

Your research involves gathering data/information from an experiment/fieldwork and comparative data from internet/literature sources. In addition, you may gather extracts about the underlying biology from internet/literature sources.

You then produce a report on your investigation.

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

Your assignment has two stages:

- ◆ research
- ◆ report

Research stage

Choosing your topic

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

Deciding your aim

- ◆ Once you have chosen your topic you need to decide what the aim of your investigation is. Remember that you need to do an experiment/fieldwork **and** find data/information to compare with your experimental/fieldwork 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/fieldwork research

- ◆ When choosing your experiment/fieldwork, remember it must allow measurements to be taken.
- ◆ When carrying out your experiment/fieldwork, you must either work 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 take a sufficient number of measurements over a wide enough range to meet the aim of your investigation.
- ◆ You must obtain repeat measurements. This should be done by repeating your experiment/fieldwork.
- ◆ Your raw experimental data may be tabulated; however, tables must not have additional blank or pre-populated columns for average and derived values.
- ◆ You will use your raw experimental/fieldwork data during the report stage.

Internet/literature research

You must carry out your own internet/literature research.

- ◆ You need to find data/information from the internet, books and/or journals that you can compare to your experimental/fieldwork data. This could be a table or a graph, or information such as a diagram or text that is relevant to your aim. This does not need to exactly match your experimental/fieldwork data but could illustrate the trend or pattern expected.
- ◆ It is important that you record where you get your data/information 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 account 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 this description using your own words.

Report stage

Producing the report

- ◆ The report must be all your own work.
- ◆ When producing your report, you are supervised by your teacher or lecturer at all times.
- ◆ You have 1 hour and 30 minutes to complete your report.

Resources

In the report stage, the only materials you are allowed to have are:	In the report stage, 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/fieldwork method◆ your raw experimental/fieldwork data◆ your internet or literature data/information◆ the reference to the source of the data/information	<ul style="list-style-type: none">◆ a draft of your report◆ a draft of your description of biology relevant to your aim◆ a specimen calculation or set of calculations for mean or derived values◆ 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. This should not be a restatement of the aim.

Aim

- ◆ Your aim must describe clearly the purpose of your investigation. This must be different from your title.

Underlying biology

- ◆ The biology you write about must be **relevant to your aim**. You need a minimum of three descriptions and/or explanations at National 5 level. Simple statements without giving depth of knowledge will not be sufficient. You must include enough information to show that you have an understanding of the biology involved.
- ◆ You must use your own words as much as possible.
- ◆ Do not include a passage copied directly from your extracts. This would not show that you understand the biology.
- ◆ You can quote from sources as long as you also give a description or explanation showing that you understand the biology.

Description of experiment/fieldwork

- ◆ You must give only a **brief** description of the experiment/fieldwork you carried out.
- ◆ You must show that you can summarise your experimental/fieldwork method. You must not give a full description/set of instructions and avoid giving too much detail.
- ◆ You do not need to give details of the range or the number of repeats.

Experimental/fieldwork data

- ◆ You must include a table showing **all** of the measurements you recorded in your experiment/fieldwork.
- ◆ Make sure you include column headings. You must also include units, where appropriate.
- ◆ You must use the data from your table to carry out calculations.
- ◆ You must calculate average values from your repeated measurements. These can be included in your table of results.
- ◆ If you've used the results from your experiment to determine further values, you should show at least one sample calculation.

Graphical presentation

- ◆ You must produce a graph of your experimental/fieldwork 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 a computer graphing package.
- ◆ If you are using a computer graphing package, you must include both major and minor gridlines, and use plotting symbols that are clear but not too large.

Data/information from an internet/literature source

- ◆ You must include data/information obtained from an internet/literature source that you can compare with the data from your experiment/fieldwork. If it is not obvious why this data is relevant to the aim, you must give supporting information or a statement to indicate the link.
- ◆ You must include a reference to this source of data/information, which would allow another person to find it. For example:

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

Analysis

- ◆ You must compare your experimental/fieldwork data with the data/information from your internet/literature source.
- ◆ This should include similarities **and** differences between them, if there are any.

Conclusion

- ◆ You must state a conclusion that relates to your aim. The conclusion must be based on **all** the data/information in your report. This must not be a restatement of the results.

Evaluation

- ◆ You must identify a factor in your experiment/fieldwork that had a significant effect on the validity, reliability or accuracy of your experiment/fieldwork. You do not need to use these terms, but if you choose to do so, they must be used correctly.
- ◆ You must then explain:
 - what you did to minimise the effect of this factor
 - or
 - what you could have done to minimise the effect of this factor
 - or
 - how you know this factor had a significant effect

Summary

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

Section	Description	Marks
Title	The report has an informative title.	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.	3
Data collection and handling	A brief description of your experimental/fieldwork method.	1
	Sufficient data from your experiment/fieldwork.	1
	Data from your experiment/fieldwork presented in a table with headings and units.	1
	Values correctly calculated from your experimental/fieldwork data.	1
	Comparative data/information from an internet/literature source.	1
	A reference for the internet/literature source.	1
Graphical presentation	Appropriate type of graph used to present your experimental/fieldwork data.	1
	Suitable scales.	1
	Suitable labels and units on axes.	1
	All data plotted accurately.	1
Analysis	Experimental/fieldwork data compared to data/information from internet/literature source.	1
Conclusion	A conclusion relating to your aim, based on all the data/information in your report.	1
Evaluation	Identification of a factor affecting the validity, reliability or accuracy of your experiment/fieldwork and a related explanation.	2
Structure	A report that can be easily followed.	1
Total		20

Once complete, your report should be given to your teacher or lecturer for submission to SQA.

Administrative information

Published: September 2019 (version 3.0)

History of changes

Version	Description of change	Date
2.0	'Instructions for teachers and lecturers' and 'Instructions for candidates' sections: minor amendments throughout to clarify the research and report stages. 'Marking instructions' section: minor clarifications throughout based on 2017-18 exam diet.	October 2018
3.0	'Instructions for teachers and lecturers' and 'Instructions for candidates' sections: assignment assessment conditions clarified throughout. 'Marking instructions' section: clarifications throughout, based on 2018-19 exam diet.	September 2019

Security and confidentiality

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