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Edexcel GCSE Geography B

Evolving Planet

Controlled Assessment

Revised Edition Workbook for the 2012 Spec

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ALWAYS LEARNING

PEARSON

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Contents

Introduction to your controlled assessment workbook

This workbook will help you plan and prepare for the controlled assessment (Unit 4: Researching Geography) as part of the Edexcel GCSE B Geography course (2012 spec). It follows the stages of the assessment, from planning, choosing your data collection methods, carrying out your fieldwork, presenting and analysing your data to handing in your final piece of work. If you follow the advice and guidance given in this book and complete all of the activities you should be on the right track.

Features in the book:

- Practice ***activities*** to help prepare you for each stage.
- ***Discussion points*** to debate with your classmates to support your understanding.
- **Top Tips**  with useful advice to support your preparation.

1 Introduction to controlled assessment

What is the purpose of this workbook?

This book is where you will start to do all of your planning. There are many discussion points and activities, which you can complete within the book. You might use different sections as you come to each stage in your controlled assessment, so you will use some sections before your fieldwork, and some afterwards during your write-up. But you will not be handing in this book as part of the official assessment.

You teacher or tutor might use this book to monitor your progress. They will be able to see how you are getting on by looking at the activities and exercises you have completed.

Activity: Your strengths and weaknesses

On the right, list your own personal strengths and weaknesses that are relevant to doing a piece of project work. You can choose some from the examples below.

My strengths	My weaknesses
Well organised	Poor handwriting
Good at sticking to deadlines	Poor organisational skills
Work well under pressure	Not very well motivated
Good at photography	Don't enjoy working outside
Enjoy talking to people	Computers are a nightmare!
Good at sketching	Time limits are not my thing
Good/confident at ICT	Can't draw
Work well outside	Don't like talking to people
'Practical' learner	Poor at working on my own
Good at design	Poor research skills

Your strengths and weaknesses

My strengths

My weaknesses

What is controlled assessment?

All GCSE Geography students must complete a controlled assessment as part of their course. This is worth 25% of the overall marks. This table shows the assessment methods for the whole Edexcel GCSE Geography B course.

Unit title	Method of assessment	Percentage of total marks	Structure of assessment
1. Dynamic Planet	External	25%	Written exam
2. People and the Planet	External	25%	Written exam
3. Making Geographical Decisions	External	25%	Written exam
4. Researching Geography	Controlled assessment	25%	Work marked by your teacher

Controlled assessment (Unit 4) is different from Units 1, 2 and 3 because it is project and research work with no written exam. It measures your geographical skills, particularly your research skills and your ability to do fieldwork and interpret the information you find. These skills are difficult to test in a normal written exam and so in controlled assessment you work in a different way and are partially supervised by your teacher during some stages.

The controlled assessment allows you to work independently and sometimes in a group. You will use class time to plan what you want to write and to go back and correct things. Some people find this way of working less stressful than a written exam. So controlled assessment gives you an opportunity to show what practical work you can do outside an exam room.

Edexcel provide a selection of 8 controlled assessment **tasks** based on four main themes:

• Coastal environments	• Rural countryside environments
• River environments	• Town/city environments

Your teacher will choose a task and organise a fieldwork investigation for your group. You will then spend time creating a **report** (usually in a written format) of the investigation which will be marked.

What will I have to do?

Your controlled assessment will be based on the information and research that you carry out by yourself or as part of a group, and also on the fieldwork data that you collect. The work you do will probably be linked to a well-known geographical theory or model.

The structure of the controlled assessment, known as the 'route to **enquiry**' is shown below. On page 86 you will find more details of how you will write up each section.

1: Purpose
Pre-fieldwork – you will probably research your topic in the classroom or learning resource centre.

2: Data collection
The fieldwork – this is going out and collecting the fieldwork data so that you are ready for the write-up.

3: Data presentation
Initial write-up – you will start to get all of the work together, and to write the aims, **methods** and **data presentation**.

4: Analysis and conclusions
Data **analysis** – you will sort through the data to show any patterns and links in what you have found.

5: Evaluation
Reflection – you will comment on the overall results and talk about any problems.

The finished piece of work should not be more than 2200 words long in total. Your work can be handwritten or word-processed. You can use a variety of presentation methods such as sketch maps, diagrams, graphs and photographs, and you can include other types of presentation, e.g. PowerPoint. You need to show evidence of simple **GIS** or visualisation. These ideas are discussed on page 87. The quality of your written communication will also be assessed in your work (see page 88).

Different types of data

Primary data is information collected by you personally in the field (including data collected as part of a group exercise). **Secondary data** is data that has already been collected by other people and 'published' in some form – for example in books or on the Internet. However, the difference between primary and secondary data may be unclear. Some data that you may get from the Internet (especially raw facts and figures) will not have been processed, so really counts as primary data.

You will not be on your own during the controlled assessment.

Your teacher will support you along the way, giving useful advice and support. This will be especially important when you start to research the topic and the task. You will be guided through the stages of the fieldwork. You may also work in groups and share information with your classmates.

Discussion points

- As a group – including your teacher – decide on a set of guidelines that you will all agree to stick to. This might include: meeting deadlines, keeping up your end of the bargain, and how your teacher will help you to plan the fieldwork.
- Decide on the guidelines for working in groups, including researching. What are the 'rules' here? In particular, discuss who will be responsible for the different bits of work and who will take overall responsibility.

Activity: My actions and support

On the page opposite make a list of actions that you will agree to stick to, based on the guidelines you have discussed. Write down any support that you will need to help you achieve these.

My actions and support

What I will try to do… *(e.g. Keep to deadlines)*	**Support I would like from my teacher (and/or classmates)**

Understanding the enquiry process

An enquiry is really a set of stages that start with a question or questions and end up with an answer or **conclusion**. You will have done an enquiry in geography before and may have used fieldwork to help you answer questions and reach conclusions. You may also have done some or all of the things in this table:

	Examples
Asked geographical questions	'How and why has this area changed over the last 20 years?' or 'What are the differences in housing between two different parts of the town?'
Suggested ways that data can be collected	Gathering people's views using **questionnaires** or using environmental quality sheets.
Collected, recorded and presented evidence	Using a range of graphs to show your fieldwork findings, e.g. a bar chart of stone sizes.
Analysed and evaluated evidence and made conclusions	Using basic statistical techniques to describe data, e.g. **mean**, **median**, **mode**, **range**, maximum and minimum; look for anomalies (unexpected differences) or unusual data; suggest reasons for what you have found.
Appreciated people's values and attitudes	Understanding the importance of local people or visitors (users) and how they may bring advantages or create disadvantages for an area.
Communicated ideas to different people	Presenting your information in a written report or using other methods, e.g. PowerPoint.

The controlled assessment tests your ability to use some of the skills in the table. It is structured so that you follow a 'route to enquiry' which has a number of separate stages, which you saw on page 6. This list shows what you will do at each stage. The controlled assessment helps you to prepare and achieve these.

1. Purpose of investigation – decide on questions, aims or hypotheses to investigate, and do any background reading.
2. Methods of collecting data – collect the data, using various appropriate methods.
3. Methods of presenting data – sort and then present the information, e.g. using graphs, maps and tables.
4. Analysis and conclusions – describe what you found, with some explanations and summary ideas linking it back to the original questions.
5. **Evaluation** – reflect on the problems you met during the study and their effects for each section of the report.

Activity: Learning from past fieldwork

Think back to any previous pieces of fieldwork that you have done and fill in the table opposite.

Learning from past fieldwork

Name of enquiry	Location/type of environment	What I did	The data I collected	How I could improve what I did, if I had to do it again

What are the 'levels of control'?

The work you do must be formally assessed, so there are rules about how much help you can receive at each stage of the process. These rules are called the 'levels of control' and there are two levels – **limited level** and **high level**.

Limited level of control applies to 1. Purpose, 2. Methods of collecting data, 3. Methods of presenting data.	High level of control applies to 4. Analysis and conclusions, 5. Evaluation.
There is no need for direct supervision (so a teacher does not have to be with you), but you will probably be supervised. You might work in a range of locations (including your home or a resource centre, but only for research purposes). You can work individually or in small groups. You might be working away from direct supervision during your fieldwork. You will start your write-up under limited control. Only oral (spoken) feedback is allowed from your teacher at this stage.	Your work will be formally supervised. You will work individually. You are not allowed help from either friends or your teacher, and you are not allowed to talk. Your work will be kept securely in a locked room/filing cabinet (or electronically under a secure system). You cannot take your work home or work at home. Computers can be used, but Internet access will be restricted to data processing/analysis/GIS. New research from the Internet *cannot be included* at this stage.

Remember these important points:

- You need to produce an individual piece of work, but you can share data, pictures, etc.
- You must not talk with other students about the content of your work during the high level of control period.
- Your teacher will give guidance on the amount of time you should spend on each stage. If you need additional time, you should ask your teacher.

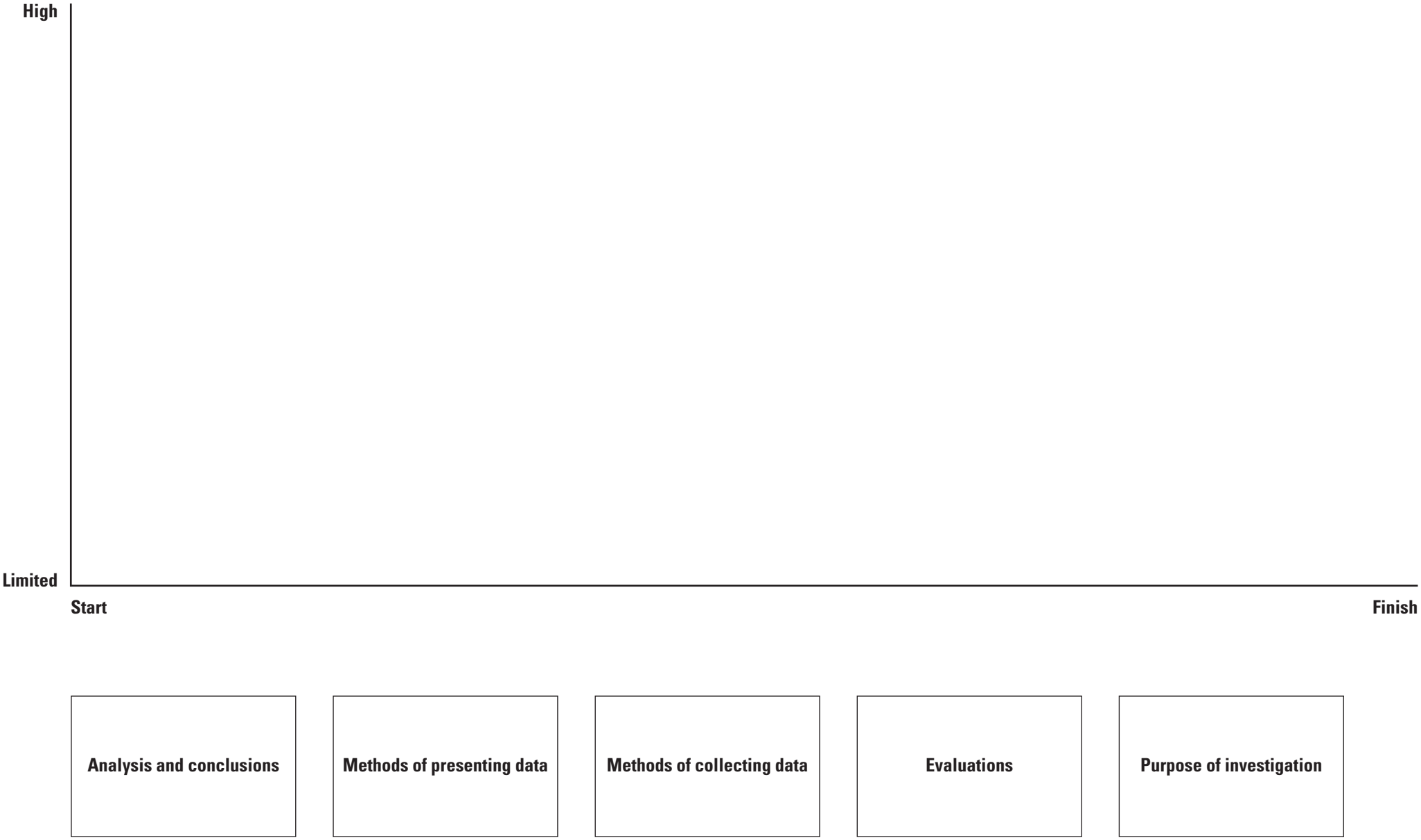
Discussion points

- Why do you think there are these 'levels of control'?
- Who will manage the levels of control and how will this work?

Activity: The complete controlled assessment process

On the page opposite, add the stages of the controlled assessment process to the graph. Position the boxes to show the 'route to enquiry' and the level of control at each stage. Try to size the boxes to show how much time each stage will take. You could add an estimate of how long each stage might take.

The complete controlled assessment process



Identifying your skills

This introduction to the workbook has looked at what controlled assessment is and how it works – the stages and mechanics of the processes involved. The next sections take you through each stage in more detail, starting with the Purpose of investigation stage.

But, before you go on, take a moment or two to be reflective about yourself. Thinking about your own strengths and weaknesses – and recognising your individual skills – is important if you want to know more about how you work and learn.

Activity: My skills as a geographer

Fill in the table opposite to complete a basic review of your skills.

My skills as a geographer

Skill	Example
Numeracy/dealing with numbers	e.g. KS3/Year 9 geography fieldwork exercise, practical work in science, work in maths
Able to make deadlines for geography work	
Computing skills, especially spreadsheets/graphs, and GIS	
Literacy and writing	
Organising and ordering a piece of project work	
Geographical knowledge of topic	
Being a geographical researcher	
Cartographical/drawing and **annotation** skills	
Fieldwork and using equipment	

Marks: 6 (12% of total marks)
Time: about 3 hours
Level of control: limited

2 Purpose of investigation

Understanding the mark scheme

Planning is the start of any geographical enquiry. It is all about collecting initial information so that you can carry out a fieldwork investigation. We will look at this in much more detail on page 18.

This is how the mark scheme describes a limited and very basic/simple piece of work for this section:

Mark range	Descriptor
0	No location or issue identified.
1–2	The issue or question is weakly identified. Location is mentioned but unclear.

This, however, is what the mark scheme says about a higher level, good (or very good) piece of work for this section.

Mark range	Descriptor
5–6	A well-focused statement that identifies and contextualises the issue or question. The location is focused on the place of the investigation.

So, to achieve the highest marks in the Purpose section you need to:

- Provide a clear, focused statement of your aims, purpose and location, and of the issue you will study, and include appropriate maps.
- Justify your choice/context of study in your Introduction (this may be linked to a theory, model or geographical process).
- You may want to use additional secondary data and research to add depth to your study, e.g. a GIS geology map.

Discussion points

- What is a 'focused statement'? Work together to think about some examples.
- What is meant by the 'place' of the investigation?
- What does 'contextualise' mean?
- What kind of maps would be 'appropriate'? Again, suggest some examples.
- How and where are you going to get hold of useful secondary data? What sort of data will it be?

You should download and read this section of the mark scheme from the Edexcel website (www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx). Download the whole mark scheme, read it and keep a printout of it with this workbook.

Activity

Read these two examples of extracts from students' **introductions** (purpose of investigation), and then mark them using the mark scheme. For each one, give it an estimated mark scheme range and then try to give it a mark. Write down your reasons for that mark, using words and phrases from the mark scheme to help you, and say how you could improve the extract.

Example 1 – Extract from Purpose of investigation

My study is trying to answer a task which is related to rivers and therefore I decided to look at how rivers change along their course. Therefore I wanted to measure things along the course of a river. As part of a group I decided that I would look at the stream at Ashes Hollow which is in Shropshire quite near to Church Stretton. The river is very bendy, and we thought that it would therefore be good to look at changes. The place we went to can be seen in the image below.

I would expect from the work we have done in lessons that things would change along the bends in the river.

Example 2 – Extract from Purpose of investigation

What are the impacts of visitors on Box Hill?

Sub-questions:

1. What attracts people to Box Hill and where do Box Hill's visitors come from?

2. What is the human (visitor) impact on the physical environment of Box Hill and is this sustainable in the long term?

Location

Box Hill is located on the North Downs in Surrey in the South East of England, (Figure 1a) close to the southern outskirts of London. Box Hill Village is about 1.5 miles to the East of Box Hill, which overlooks the town of Dorking (Figure 1b). Box Hill is about 1 mile North of Dorking, and Box Hill is 2 miles South of the town of Leatherhead. The main roads running near to Box Hill are the A24 which runs through Leatherhead, and the A25, which runs through Dorking. The zig-zag road (Figure 1c) runs up the side of Box Hill and provides access to the National Trust café and shop. Access for wheelchairs is limited to honeypot sites like Rykas Cafe and the National Trust café at the top of Box Hill. Box Hill can be accessed by train and by bus (Sunray Travel No. 516).

	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			

Writing an Introduction: linking your title to the task statement

Some enquiries test a **hypothesis** (see page 20) or set one or more research questions to be investigated. For example, the published task statement and question set by Edexcel might be something like:

Investigate to what extent river landforms and channel shape vary downstream.

This should form the basis of several smaller research ideas which are more manageable and easier to work with. So, for instance, the general task statement could be broken down into aims, questions and hypotheses such as:

A study of the changes in river landforms from X downstream to Y.
An investigation into changes in channel shape (width and depth) with progression downstream.
A study of changes in river landforms between two different parts of the river, e.g. upper and lower.
A study of the size, characteristics and distribution of selected river and channel landforms.
How does the river cross-section vary at five bridges along its course?
The discharge of the river increases downstream according to the model.
An investigation into whether the pool-riffle/meander pattern fits the predicted model.

These **aims**, **questions** and hypotheses can now be linked to the title you are going to investigate. Remember this title could be in the form of a question (how, where, why, etc.) or a statement (e.g. changes in land use between X and Y). Hypotheses are statements which are testable – see page 20. Your teacher may give you the title or they may ask you to design one yourself (see Activity below). Some geography enquiries can be very successful without any hypotheses, so think carefully about this when you are starting out.

Activity: Technical words

Begin to make a list or glossary of technical words. Put it in the back of the workbook, and add to it as you work through the different activities.

Activity: Getting the title exactly right

- Look at the four titles given opposite for different themes (they cover coastal environments, river environments, rural/countryside environments and town/city environments). Put them in a rank order of preference, with (1) for what you think is the best, and (4) for the worst. You need to justify each of your decisions, i.e. give a reason for why you put it there. You should think about how achievable each of them is in terms of scale and how easy it would be to collect the data.
- Find out which task statement you will be using. Then try to develop a title which is: interesting, relevant, challenging and clearly linked to the main focus of the task statement.

Getting the title exactly right

Title	Rank	Justification
An investigation of how a river changes downstream		
Perceptions of coastal management schemes versus actual approaches		
Attitudes to increased tourist pressure in village X are broadly positive		
A study of town X to see how it has recently changed		

My title: _____

Why I think this is a good title: _____

Researching the geographical context

'Geographical context' is the geographical background (facts, ideas, **theories**, models, assumptions, etc.) that may support the aims of the study. You may want to provide brief ideas about the geographical context as part of your introduction. This often helps in an understanding of the ''bigger picture'' ideas.

Becoming a researcher

To find out more about the existing ideas that are important to your enquiry (e.g. knowledge about any processes or about the location) you need to become an efficient researcher. There is plenty of information available to help you. Your job is to collect this information carefully and thoughtfully, and, most importantly, to be selective (don't just use everything you find).

Discussion points

- Think about the information you will use to establish a context and how reliable it is. How important are these things for reliability?
  - Who wrote and researched the article or posted it on the Internet? Do they work for a particular organisation?
  - Why does the material exist? For publicity, academic purposes or just general interest?
  - How old is the material? If you need up-to-date statistics, check the age of the material.
- Are there any blogs or forums that are linked to your particular enquiry? These are widely available on the Internet and can be used to give a 'profile' of an area. Look at the information taken from blogs below. They all relate to the same seaside town in south-west England. What kind of impression do they give of this town?

'A grand seaside town'	'Not such a nice place'
'At the far end of the prom is the old Birnbeck Pier, which has been derelict for years. It's now having a huge renovation to turn it into luxury apartments and bars.'	'Any place that has more than 10 square feet of tarmac, will, by nightfall have around 20 Ford Escorts and Fiestas revving their engines and blasting their stereos.'
'The main town is home to the typical cafés, numerous hotels, B&Bs, bars, tourist shops and attractions that you would associate with an English seaside town.'	'All the scum hang around here. It's a nasty place to live, over 15 drug rehab centres surround the town, with over 5% of the population known drug addicts.'
'The beach is very clean – there are stalls selling ice-creams, a seafood stall, donkey rides and there are also designated dog-free areas and an area set aside for a children's play zone.'	'The council have spent years milking the tourists with no intention of re-investing any money. We used to be proud of this place, not so now. All these new houses, and the developers don't offer anything to upgrade the infrastructure . . . why not?'

Activity: Different sources of information

Complete the table opposite to show the advantages and disadvantages of each type of research material.

Activity: What ideas support your enquiry?

What model, theory or idea will you be using to support your enquiry? Write down its key points opposite, and if possible do a drawing or sketch to show what it suggests.

Different sources of information

	Internet	Books	Magazines, articles, leaflets
Advantages			
Disadvantages			

What ideas support your enquiry?

Model/theory:

Key ideas/purpose:

Sketch of model:

Setting up aims, questions or hypotheses to show the purpose of your study

The best enquiries often test hypotheses or set one or more research questions that can be investigated and evaluated. We have already seen how the aims, questions and hypotheses must be linked to your title (see page 16). The table below gives some examples of aims, questions and hypotheses.

Aim A statement of what you hope to achieve.	**Question** Something you will ask that links closely to the enquiry title (sometimes called a key question). It must be geographical.	**Hypothesis** A testable idea, in the form of a statement (not a question).
e.g. This enquiry will aim to discover the reasons for the changes in the number of people in town X during the course of a day.	e.g. How and why does the number of people shopping in town centre X change over the course of one day?	e.g. The number of people in town X changes throughout the day.
e.g. This enquiry will aim to discover the reasons for the lack of accessibility in village S.	e.g. How and why does the size and shape of beach sediments change along the coast?	e.g. The size of beach sediments at location T increases towards the east.

A hypothesis may not be suitable in every situation. The availability of different types of data (e.g. numbers, opinions) should be taken into account.

In general it is better to study one aspect in detail rather than several aspects less well. Studying several aspects can make it harder to reach firm conclusions.

Discussion points

- When would it not be a good idea to use a hypothesis?
- Think about the focus of your work (its aims, questions, etc.). Is it narrow enough to be achievable?
- An 'issue-based' enquiry considers an argument. Does your title take into account two sides of an argument or conflict? This may be a suitable approach when you are thinking about issues which can affect people locally.

Activity: Your aims, questions or hypotheses

Rewrite your exact agreed title at the top of the page opposite. Look at your title and think about two or three aims, questions or hypotheses that are directly related to it.

Notes

Your aims, questions or hypotheses

Agreed title: _____

	My aim/question/hypothesis	Reason for choosing it
1		
2		
3		

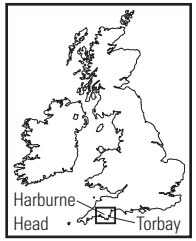
Researching the study area – the place of the investigation

It's very important to include a description of where you have done your fieldwork in the Purpose section – it is about setting the scene. It needs to give the facts briefly and clearly so that any reader will understand (and be interested in) what you are trying to do. Setting the scene for the controlled assessment has several key ingredients. The Introduction could include a GIS/digital map which shows the location (including regional context) and background facts and figures (which are up to date).

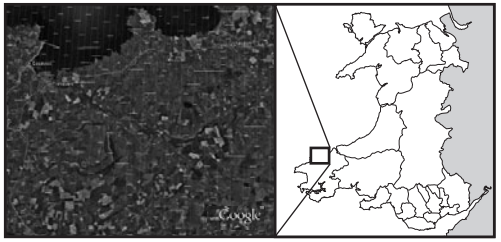
Activity

These examples of maps are from students' introductions. Read the comments to find out which one has been given better marks – and why.

Example 1



Example 2



Comments

A basic answer (low level 1–2 for Purpose of investigation)
This should have really used a digital GIS map, e.g. Google maps. Also it would have been better to show a regional location for the fieldwork, rather than a map of the UK, so that the fieldwork sites were larger scale and clearer.

A good answer (mid level 3–4 for Purpose of investigation)
This is a better example of a simple GIS map which is attached to a regional map showing the more precise location of the fieldwork. This could be improved by the addition of a scale and the actual fieldwork sites.

Using simple web-based GIS/visualisation

You have to show that you have used simple GIS in your controlled assessment.

GIS stands for Geographical Information System. It usually has three components:

- a map
- data that can be displayed on the map
- a piece of computer software/website that lets the user choose which data is displayed and how.

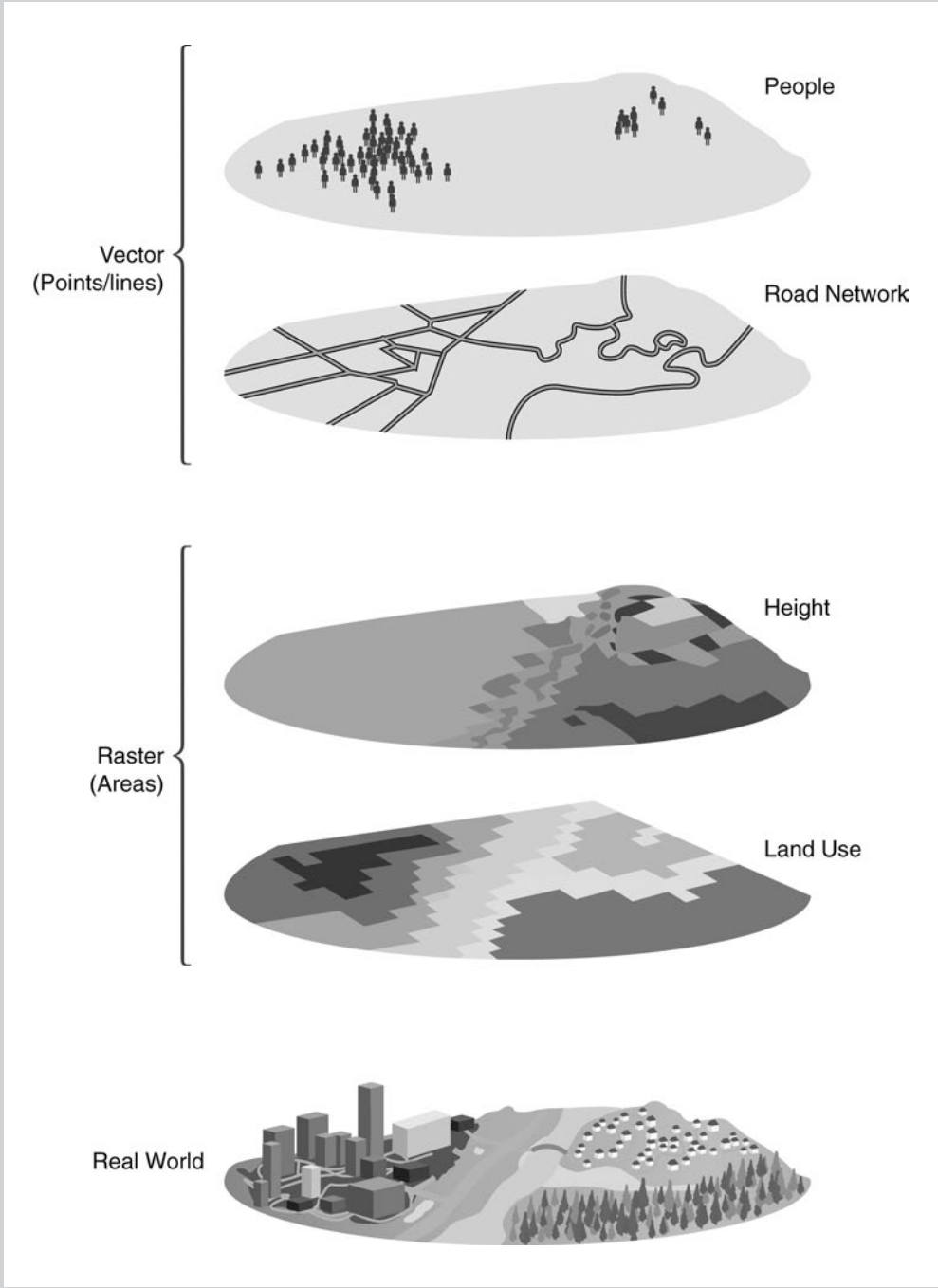
GIS and digital map technology is very important in the current world of work. Just about every part of industry and public service now depends on GIS. It is essential to retail, agriculture, the emergency services, building and planning.

Geographic information is simply information that describes the locations of physical and human features found on the Earth's surface.

This geographic information can include socio-economic and demographic data as well as physical and environmental data. In GIS, the data is digitally coded and then represented as points and lines (based on 'vectors') or as areas (based on 'rasters') on a map.

Discussion points

- Describe your experiences of using GIS/visualisation (they don't have to be linked to geography), e.g. Sat nav in a car. Was it a help or was it an obstacle?
- Has anyone had experience of using GIS systems on the Internet (Google Earth, Google Maps, Microsoft maps, etc.) or with paid-for systems such as Aegis, ArcGIS, Memory Map, Anquet Maps or Infomapper?



Google Earth and Google Maps let users create their own 'placemarks' and 'overlays'. You could use these to show, for instance, the location and ages of different types of housing, or you might add labels to a map to provide more information on your reasons for choosing a particular site.

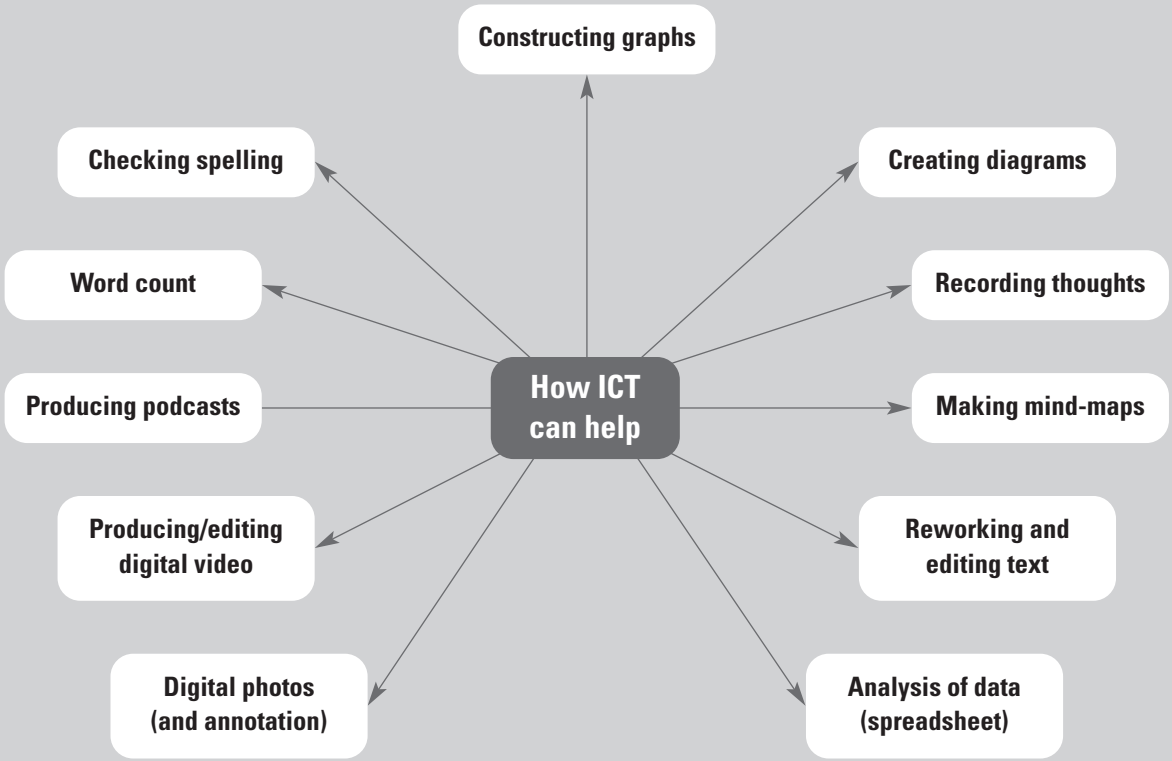
The 'add polygon' tool in Google Earth allows you to put shapes on to a base map.

Each shape is a different house included within the survey. They have been created using the 'add polygon' tool.

Houses have been given different colours according to their age. You could use the same process – to create a land-use map of a town, for example.

Using ICT in your controlled assessment

You don't need to use **ICT** in your controlled assessment, except GIS (see page 24). However, it would help to have access to a computer – for using a spellchecker or drawing some graphs, for example. (Of course, access to computers and other ICT equipment may be out of your control.)



Discussion points

- Make a list of the advantages of using computers and other technology during the limited control work (Purpose, Methods of collecting data, Methods of presenting data).
- Are there any parts of the controlled assessment where it would not be a good idea to use ICT?
- List some of the barriers to and problems of using ICT, for you personally and within your school. Work with your teacher to think about ways to manage or overcome these barriers.

Notes

Reviewing your Introduction

Activity: Checklist

Here is a checklist of the items and characteristics that you must have in your Introduction. If any of your sections are incomplete you will need to change them. Go down the list and add yes, no or not sure, for each item.

Your enquiry may also involve other geographical ideas that emerge as you begin your research – the more of these you can link up, the better! Look at the list below and see if any of these additional ideas might help improve your work.

- Changes over space or time
- Analysis of patterns and/or **distributions**
- Identification of geographical processes
- Consideration of local issues or problems
- Evaluation of specialist equipment
- An appreciation of environmental impacts
- Suggesting management solutions
- Setting up the work for using simple statistics

Getting the number of words right is also important – up to about 300 should be enough. This may be 1 to 3 pages or so, including maps, diagrams, background information, etc.

Finally, check that your Introduction also does these four things:

1. It has a logical flow, structure and sequence.
2. It has an interesting opening statement or paragraph which draws in the reader.
3. It uses a clear writing style – it does not ramble or repeat itself.
4. Its concepts and terminology are clearly defined.

Look again at the mark scheme you have printed out. Can you award yourself a top-band mark for this part of the work? If not, look to see how you can improve the work at this early stage. It is probably easier to do this now rather than waiting until later, because you are doing it under limited control.

Checklist

	Yes ✓ *or* **No ✗** *or* **Not sure?**
Does it have a clear title (linked to the task question – and geographical)?	
Does it include the aims of the investigation (2–3 preferably, which can be set as hypotheses, questions or statements)?	
Is there a located and defined study area, perhaps including GIS maps?	
Have you referred to the geographical background (theory, ideas, relevance, context, etc.)?	
Does it read well and is it interesting? Have you checked for grammar and spelling?	
Does it have an appropriate number of words and pages?	

Marks: 9 (18% of total marks)
Time: one day
Level of control: limited

3 Methods of collecting data

Understanding the mark scheme

In this section you are given marks for describing the way you collected geographical data (primary and/or secondary). You need to describe:

- How and where you decided to collect the data – the surveying and sampling approaches, the locations and the sites.
- The techniques used – equipment, recording sheets, etc.

We will look at these things in much more detail throughout the rest of this section – pages 30–49. You should also show use of GIS here (see pages 24–25 for more details).

This is how the mark scheme describes a limited and very basic/simple piece of work for the Methods of collecting data section:

Mark range	Descriptor
0	There is no evidence of data collected or method(s) of collection.
1–3	There is limited evidence of primary and secondary data collected by the student. There is little explanation of why the methods were used to collect primary and secondary data. The contribution of the student to the primary data collection is briefly described. Limited evidence of risk assessment. No obvious evidence of the use of GIS to gather data.

This, however, is what the mark scheme says about a higher level, good (or very good) piece of work for the Methods of collecting data section:

Mark range	Descriptor
7–9	The primary and secondary data has been accurately collected by the student and is appropriate for the investigation. There is detailed explanation of why the methods were used to collect primary and secondary data. The contribution of the student to the primary data collection is described in detail. Clear reference to risk assessment, explicitly linked to the investigation. Use of GIS is clear and well linked to chosen issue or question

So, to achieve the highest marks in this section you need to:

- Include a clear description of the methods used to collect and record data (this may include information about sample sizes etc.).
- Explain and justify (say why you chose) the methods used to collect and record data (linked to the task statement).
- Explain how and why you have used GIS (e.g. basic, such as Google maps, or more complex systems, such as Aegis).
- Demonstrate that you have undertaken a risk assessment.

You should download and read this section of the mark scheme from the Edexcel website (www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx). Download the whole mark scheme, read it and keep a printout of it with this workbook.

Discussion point

How are you going to explain the choice of your data collection methods? Give some examples.

Activity

Read these two examples of extracts from students' sections on their methods of collecting data, and then mark them using the mark scheme. For each one, give it an estimated mark scheme range and then try to give it a mark. Write down your reasons for that mark, using words and phrases from the mark scheme to help you and say how you would improve the extract.

Example 1 – Extract from a Methods of collecting data section

Whilst on the field trip to the five locations along the east coast of Yorkshire we carried out various methods of recording information about the locations both independently and in a group with other pupils. The locations that were visited were Sandsend, Upgang Beach, Whitby West Cliff, Boggle Hole and Robin Hood's Bay, which are all along an approximate 15km stretch of coastline – see Figure 3 (a GIS map of the locations). Various different techniques and equipment, including wave counts, beach profiles and field sketches were used. An overview of these techniques is shown in Table 1. We also conducted environmental quality surveys to examine the quality of beach protection measures. Photographs and video were also used for more evidence. By visiting these various locations and collecting the primary fieldwork data it provides the means to test the following hypothesis:

The greatest protection of coastal areas does not occur in the areas of greatest threat from coastal erosion.

Example 2 – Extract from a Methods of collecting data section

I collected data which looked at the speed of the river and the size of the sand in the channel. I did the speed by measuring it with a special machine. This was done at some places along the river which I was told to stand at. The sand and stones were measured by picking up pebbles and measuring how big they were with a ruler (in cm). If there were no pebbles, I just recorded the word 'sand' instead.

We also had to measure the width and depth of the river. We used a ruler which was stretched across the surface of the water to measure the width (sometimes it was not long enough so we had to just guess). I also used a ruler to measure the depth. Sometimes this was difficult as the bottom of the stream was not flat, or it was too deep, I also measured the land use on the river.

	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			

Getting the data

In this part of the controlled assessment, you think through and decide the best ways to get the data to meet your aims, questions or hypothesis that you chose on page 21. You should have already begun thinking about this as part of the Purpose of investigation process. The fieldwork itself should take about one day (probably including time for travelling). Some schools will have more time, others less.

Getting the right data is important – it should be the information you need to answer the questions you set out in your Introduction.

Discussion points

Think about these questions, and how you can influence decisions about them. Some of them may be out of your control if the fieldwork is organised as a group exercise, but you will probably be able to have some input and so show initiative.

- What data do you need to collect?
- Where will you collect the data?
- When will you collect the data?
- What materials and equipment will you need?

This section of the workbook looks at a number of data-collection techniques and you will probably use some of these during the fieldwork part of your controlled assessment. Several of the techniques are specific to particular themes or task statements, so think of this as a bit of a 'pick and mix' – you can dip in and out of different techniques and approaches. The page numbers of the different data-collection methods are shown on the right.

Types of data – page 31
Introduction to sampling – pages 32–33
Photographs and sketches – pages 34–35
Questionnaires and interviews – pages 36–37
Techniques for rivers – pages 38–39
Techniques for coasts – pages 40–41
Environmental quality surveys – pages 42–43
Land use mapping – pages 44–45
Websites for other information – pages 46–47
Options for writing up the methods section – pages 48–49

Activity: Looking at different types of data

- We have already mentioned primary and secondary data. Complete the top table on the opposite page, giving the differences between primary and secondary data, and thinking about their advantages and disadvantages. You should use any fieldwork books and the Internet to help you.
- What are the differences between **quantitative data** and **qualitative data**? Complete the bottom table on the opposite page, providing a few examples of each.

You should keep a list of all the secondary and web resources that you use (with relevant print-outs) so that they can form part of your **references** – see pages 90–91.

Looking at different types of data

	Primary data	Secondary data
Examples		
Advantages		
Disadvantages		

	Quantitative data	Qualitative data
What is it?	Numerical data – facts and figures	Non-numerical or subjective data. May be made up of words, feelings, images, etc.
Examples		

Tip

- Include a *mixture* of primary and secondary data.
- Use *accurate* and *reliable* data collection.
- Include a *good range* of individual data from the group data sheet (linked to individual aims/questions/hypotheses).
- Use the *right amount* of data to answer your aims/questions/hypotheses.
- Show *initiative* in your data collection.
- Show *clear use* of a justified sampling approach/strategy.

Introduction to sampling

Stage 1
Define the study area on a base map, e.g. section of coast, town, etc. You need to say why you chose this area in your methods section.

Stage 2
Decide on a sampling strategy (see Activity). You may also choose point, line or area samples, depending on the area being surveyed.

Stage 3
Decide on the sample size and number of sample points.
You could give this as a percentage of the whole population/area.

Stage 4
Decide how the work will be organised (this may affect equipment requirements).
Consider a 'pilot' survey – a test run before the main survey.

Usually there is just not enough time, resources or energy to measure everything or to interview everyone. A carefully chosen sample is much easier and quicker to investigate – and will still give fairly accurate results. The key to effective sampling is to decide on your **sampling** strategy (plan of action) before you begin to collect your primary data.
The stages in the sampling process are shown on the left.

Choose your sample size carefully as your analysis could be inaccurate if your sample size is too small to make reliable conclusions. Unfortunately, there is no magic 'right' sample size because it depends on what you are doing. In general, though, the more data you collect, the more likely you are to get reliable results. As a rule of thumb, 30 to 50 items is usually enough, unless you are investigating a very large population. Think carefully about what is practical, but try to make the most of any group data collection methods.

Activity: My equipment list

Write down a list of equipment required in the space on the right. You should build on the discussion point on page 30.

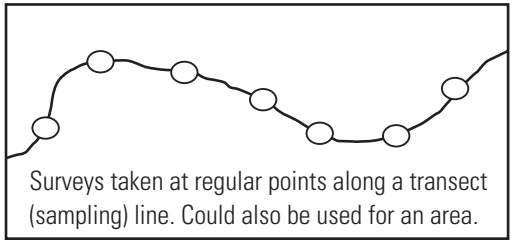
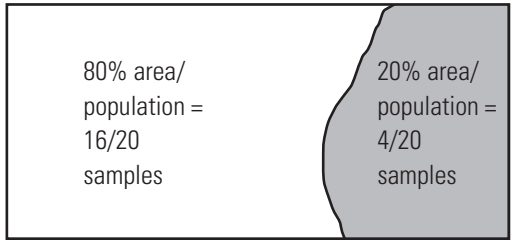
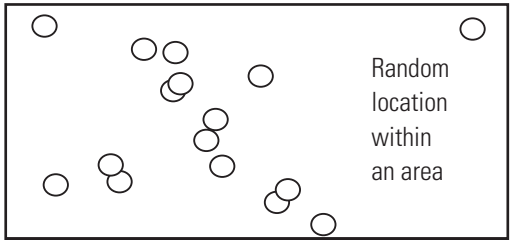
Activity: Sampling approaches

- Complete the table on the opposite page, filling in the advantages and disadvantages.

- Decide on your individual approach to sampling and complete the section at the bottom of the page to show why you have chosen that approach. Remember that you might use more than one type of sampling approach during the fieldwork. Make sure that you discuss all strategies.

My equipment list

Sampling approaches

	Systematic	Stratified	Random
Description	Taking samples at regular known distances, e.g. every fourth shop, or at the points of a regular grid over an area. Used when there is an expected change between two locations. Often used along transects.	Selecting a sample to take account of something known about the area or about the people being surveyed, e.g. number of males and females in a town. The adjustment makes the sample fairer and more representative.	Selecting a sample by chance, usually based on published random number tables. This avoids subjectivity and bias in the selection process. Used when the environment or population is expected to be similar everywhere.
Level of difficulty	Straightforward – you can just get on with it!	More complicated because information about the location is needed to select the sites.	Need random number tables to do it properly.
Visual example	 Surveys taken at regular points along a transect (sampling) line. Could also be used for an area.	 80% area/ population = 16/20 samples; 20% area/ population = 4/20 samples	 Random location within an area
Advantages			
Disadvantages			

Stretch

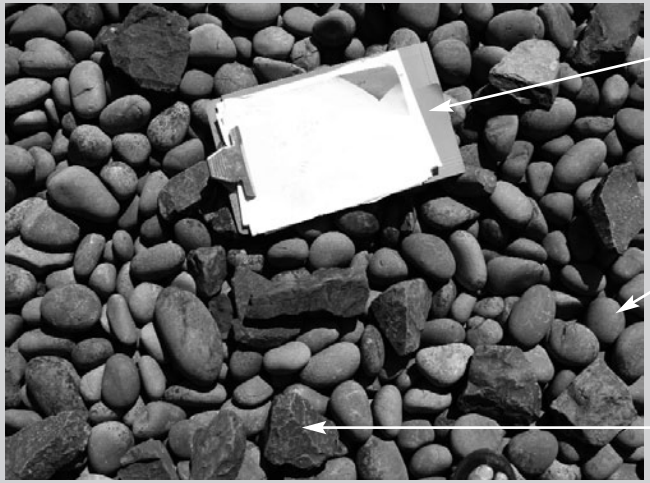
For more information on these sampling techniques, have a look at www.geographyteachingtoday.org.uk/fieldwork/resource/fieldwork-techniques/sampling-techniques.

Sampling strategy I will use		
Why I am using this strategy		
Number of samples I will collect		

Making the most of photos, videos and sketches

The pictures you include can add great value to your controlled assessment. When you visit a place to do fieldwork it is not always easy to put the things that you see into words or to quantify them in a table. This is when using a digital camera (or video) and drawing sketches can help you. In particular, these methods of producing images can help to:

- Set the scene and the context of the area of study. Images can record physical and human features and can be labelled with processes, impacts, scales, conflicts, advantages, disadvantages, etc.
- Provide evidence of the data-collection and fieldwork process. This is especially useful to show any technical equipment or precautions taken to ensure the data collection is accurate.
- Give examples to show what you mean. For example, pictures can be used to illustrate the scale and size of pebbles on a beach.



	Photographs	Video/DVD	Sketches
Advantages	• Cheap, easy to take, no specialist equipment needed • Easily stored and shared • Easily labelled	• Exciting new technology • Can take videos on most phones • Ability to add a narrative or sound and labels/text	• Make you look more closely at the landscape/features • No equipment or specialist knowledge needed • Can be very geographical and good quality when done well
Disadvantages	• Sometimes not very geographical • Students often use too many • Can be poorly annotated and used	• Can take lots of time and effort to get a quality product • The result may lack 'geographical interest' • Can be difficult to edit and film well	• Not everyone feels confident at sketching • Doesn't work when it is wet or very windy and cold • Can be rushed and then not worthwhile

Discussion points

- Discuss how you have used images in fieldwork in the past. What were the best and worst things about using images? What advice do you have?
- Work together to create a checklist of 'dos' and 'don'ts' when using images. Copy and share the list, and put it at the back of this workbook.
- Decide how you are going to share, catalogue/index and store any digital images that will be used for group work. It is also a good idea to take some images yourself. These can be a back-up and mean that you were not simply relying on other people.

Activity: Adding labels and annotations to a picture

Add labels and annotations to the photograph on the opposite page, selecting from those in the box underneath. Then use arrows to join your labels to the relevant points in the picture. Think about any additional labels or annotations that could be added.

Adding labels and annotations to a picture

Jurassic Coast, Dorset: The east side of Durdle Door seen from Hambury Tout

Coastal footpath	Honeypot/tourist area	Fence to reduce human impact		Cove
Cliffs	Promontory	Steeply dipping beds	Slopes	Bay

Remember: labels are simple descriptions, annotations are more complex descriptions with explanations or comments.

Questionnaires and interviews

Questionnaires and **interviews** are important sources of primary data, especially for the human geography themes. Using these techniques is sometimes the only way you can collect information from people.

Questionnaires	Interviews
• Tend to be used to get short, factual responses • Possible to limit the range of responses by using closed questions (e.g. yes/no, tick boxes) • May be carried out on the street, as a face-to-face survey • Likely to produce lots of completed questionnaires (10s+)	• Use longer, open-ended questions • Discussion-type format in a variety of locations • Usually used to find out attitudes to complex issues, e.g. town development • May only be possible to hold a limited number – just a few

Don't underestimate the value of face-to-face interviews. They can produce very useful information, particularly about attitudes to sensitive local issues, such as new supermarkets or the relocation of a train station.

The design of questionnaires and interviews is often a weakness. On the page opposite, the comments on the two example questionnaires show how one has been quite well designed, but the other is much poorer.

Below is some guidance to think about if you are planning to use questionnaires or interviews.

	Questionnaires	Interviews
1	Make sure that a questionnaire is the best way of collecting the information.	For your own safety, never arrange interviews with people you do not feel comfortable with or agree to meet strangers in places where you feel vulnerable.
2	Think carefully about what information is needed so that the questions are properly matched to what you want to find out.	Avoid taping/recording interviews in busy public places such as streets, leisure centres or noisy coffee shops.
3	Arrange the question order so that the questionnaire 'flows' and has a clear and logical sequence.	Brief yourself on the topic carefully and then work out a list of themes that you want to explore. This can include a few factual questions that you ask everyone.
4	Always check the exact wording of all questions to make sure that none are unclear or too vague.	Be prepared to cope with potentially offensive views. Try not to challenge an interviewee, but merely accept that this is his or her point of view.
5	Work out how answers will be recorded – on the sheet, on a separate sheet, etc.	Taping/recording an interview is generally easier than trying to take notes.
6	Work out how many questionnaires you will need to ask as a group. Generally the more there are, the better the results.	A number of interviews can be used to get a range of opinions.
7	Pilot your questionnaire to check that the questions provide the information you require.	Practice your interview questions with a friend/parent/guardian.

Activity

These examples of questionnaires are from students' sections on their Methods of collecting data. Read the comments to find out which one has been given better marks – and why.

Hello. I am a GCSE student from the school down the road. I need to ask some people some questions as I have to do my controlled assessment.

1. Why have you come here?

2. Have you been here before? ☐ Yes ☐ No ☐ Can't remember ☐ Don't know

3. How long do you intend to stay? ☐ < Day ☐ Several days ☐ > Week

4. Are you aware that you are contributing to the deterioration of this site?

5. How did you get here? ☐ Car ☐ Train ☐ Coach

6. Where have you come from?

This information has been very helpful. Thank you for your time and trouble.

Good morning/afternoon. I'm doing a survey of visitors as part of my GCSE geography controlled assessment. Can I ask you a few questions please?

1. Where do you live? (name of town or city)

2. How did you get here? (circle) Car Coach Train Walk

3. How long did it take you to get here from your home?

4. How long will you stay? (circle) ½ day 1 day 2–7 days Longer

5. How will you spend your time here (circle all that apply)?
Sightseeing Visiting friends Walking Biking Other

6. You are aware of traffic problems at the site. Do you agree? ☐ Yes ☐ No

7. There is a proposal for a new bypass to be built to reduce traffic congestion in the area. Where do you think it should be situated?

8. Which age range are you in? ☐ <20 ☐ 21–35 ☐ 36–50 ☐ 51–65 ☐ >65

☐ Male ☐ Female

Date Survey No.

Thank you for your time. This will be a great help in my project. Goodbye.

Examiner comments

A basic questionnaire (mid level 4–6 for Methods of collecting data)

There are several problems with this questionnaire:

✗ The introductory comment is not very good.
✗ The questions do not seem to be in a sensible order.
✗ There are not enough response options for questions 2, 3 and 5.
✗ Q1 is a very non-specific open question. People could put anything here: 'It's my day off', 'Bingo was cancelled', 'To meet my friend', 'I don't like Brighton', 'I always come here', etc.

A good answer (top level 7–9 for Methods of collecting data)

This is a much better questionnaire than A, because:

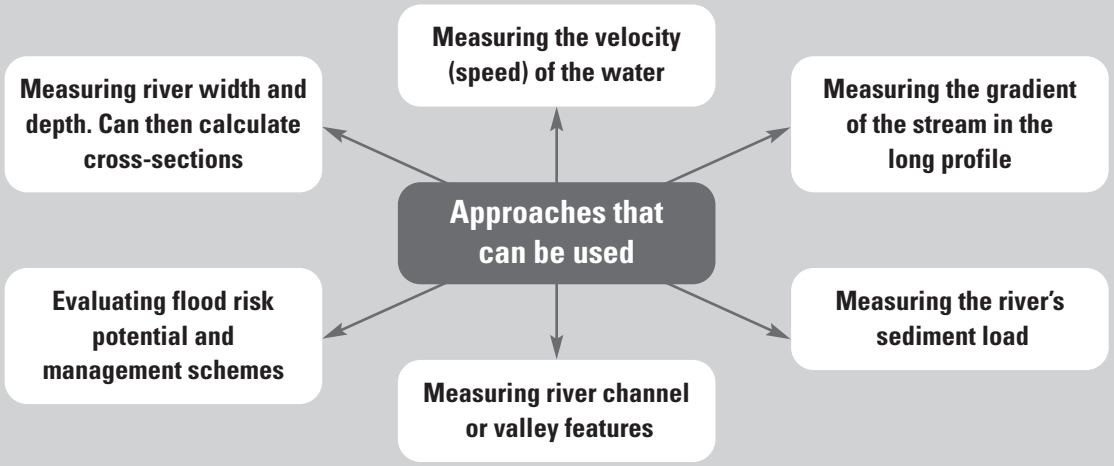
✓ It is relatively well structured and questions seem to follow a logical sequence.
✓ It has a range of options (Q2) for people to choose.
✓ It focuses on the problem of traffic congestion.

But…

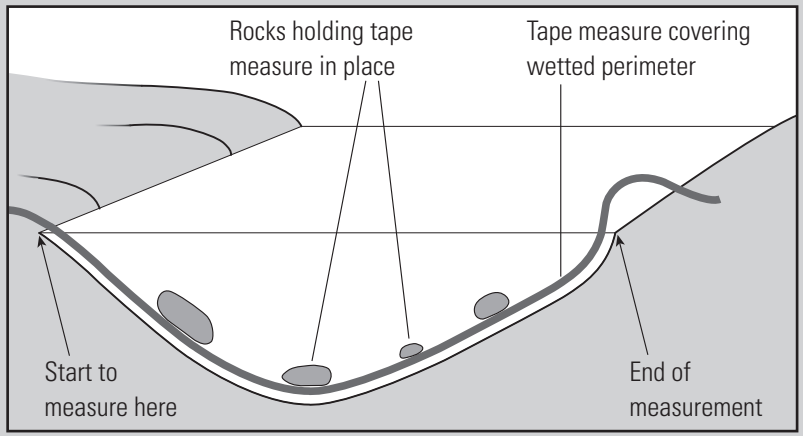
✗ It is not a good idea to ask people their age – it can offend, though asking for an age range is better than asking directly.
✗ Q6 is loaded and biased towards a 'yes'.
✗ Q7 requires technical or local background knowledge that visitors are unlikely to have.

Tackling rivers

The measurement of rivers and streams has always been a popular fieldwork activity at GCSE. Rivers offer a wide range of possible mini-projects that come under the general task statement set by Edexcel. There are several ways of measuring rivers:



Measuring wetted perimeter (above) and channel width (below)



Discussion points

- Think about the area where the study will be taking place. What were the reasons for choosing this area? (You will need to say why you used these in your methods table – see pages 48–49.)
- What is the focus of your enquiry – what are you looking at, e.g. changes downstream, valley form and features, channel characteristics, flood risk?
- Work in groups to decide how you will carry out your chosen sampling strategy (pages 32–33). You will need to think about number of sites etc.

Activity: Your equipment and your recording sheet

- Fill in the boxes on the opposite page to describe the equipment that you will need for your enquiry.
- Tick the things you will need to measure in the list. Then, using this information, mock-up a recording sheet in the space provided.

Your equipment and your recording sheet

Piece of equipment	What it measures and why you need it (justification)

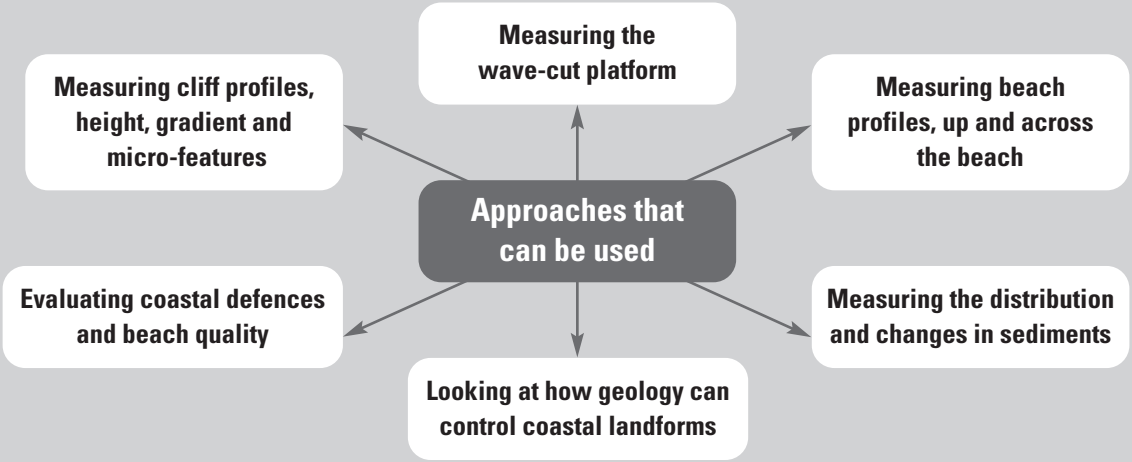
The things that I will need to measure are:
(tick as necessary)

- ☐ **Gradient**
- ☐ **Width**
- ☐ **Depth**
- ☐ **Stone size (long axis)**
- ☐ **Stone shape (roundness)**
- ☐ **Stream velocity (float)**
- ☐ **Size/shape of river features**
- ☐ **Wetted perimeter**
- ☐ **Valley floor width**
- ☐ **Land-use**
- ☐ **Flood risk score**
- ☐ **Hard/Soft engineering management measure**

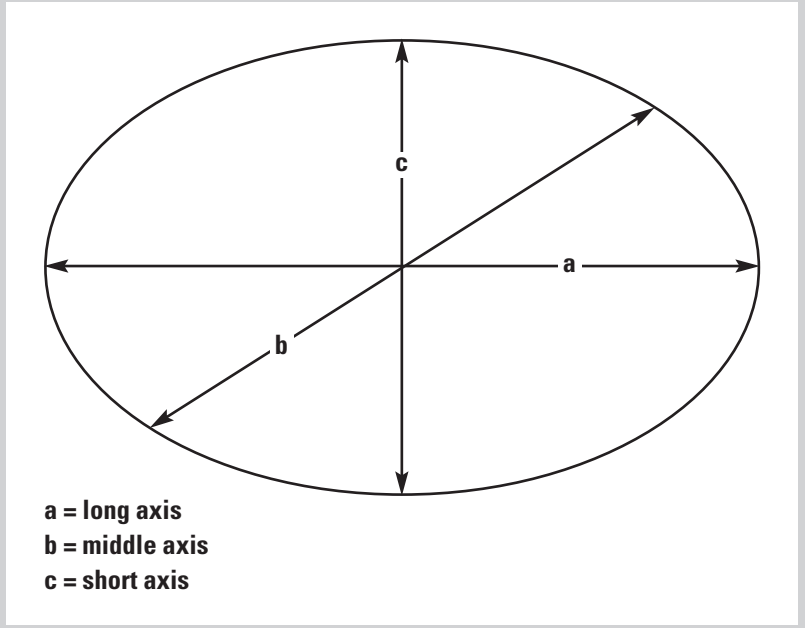
Recording sheet

Tackling coasts

The coast is a great place to do geography project work, especially in good weather. Coastal fieldwork offers a wide range of possible mini-projects that come under the general task statement set by Edexcel. There are several ways of measuring coastal features:



Measuring beach profiling (above) and sediment axes sizes (below)



Discussion points

- Think about the area where the study will be taking place. What were the reasons for choosing this area? (You will need to say why you chose these in your methods table – see pages 48–49.)
- What is the focus of your enquiry – what are you looking at, e.g. comparison of different sections of coast, beach profiles, hard versus soft defences, attractiveness to visitors?
- Work in groups to decide how you will carry out your chosen sampling strategy (pages 32–33). You will need to think about number of sites etc.

Activity: Your equipment and your recording sheet

- Fill in the boxes on the opposite page to describe the equipment that you will need for your enquiry.
- Tick the things you will need to measure in the list. Then, using this information, mock-up a recording sheet in the space provided.

Your equipment and your recording sheet

Piece of equipment	What it measures and why you need it (justification)

The things that I will need to measure are:
(tick as necessary)

- ☐ **Stone size (long axis)**
- ☐ **Stone shape (roundness)**
- ☐ **Beach gradient**
- ☐ **Cliff gradient**
- ☐ **Micro-features**
- ☐ **Land-use**
- ☐ **Hard defences evaluation**
- ☐ **Beach quality**

Recording sheet

Environmental quality surveys

Environmental quality surveys are important tools which can be used in a wide range of geographical investigations, for example:

- Comparing the **quality of life** between two villages or two parts of a town.
- Beach quality surveys or the effectiveness of coastal management schemes.
- Attractiveness of two areas of parkland or woodland.
- Impacts of walkers on a footpath.

On the right is an example of an 'off the shelf' environmental quality survey form that has been filled in. You can design the survey form yourself (mixing parts from examples you find in books) or you can adapt a form like this one, e.g. by adding your own headings. Showing initiative when you design your form might help you gain higher marks.

	–3	–2	–1	0	1	2	3	
Cost: Expensive		✓						Cheap housing
Travel: Poor road access and quality						✓		Good road quality and accessibility
Crime: High crime rate				✓				Low crime rate
Environment: No gardens, badly kept vegetation							✓	Large, well kept gardens and public green areas
Amenities: Difficult to access, bad quality and too little					✓			Plentiful and easy to access, good quality
Noise and litter: Constant traffic and a lot of litter in public areas						✓		No noise from traffic and clean, well kept areas
Schools: Far away, difficult to access						✓		Nearby and easy access

It may be a good idea to add 'weighting' to your survey – increasing the scoring on those criteria (headings) that you think are more important. When you have designed your survey form, you should 'pre-test' it before going out to use it in the field. You could use relevant photographs, as in the activity below.

Discussion points

- Discuss the advantages and disadvantages of using quality surveys.
- Why are quality surveys useful in comparing different areas?
- Quality surveys are usually based on the surveyor's own judgements, but sometimes other people's views are used. Discuss the differences between these two approaches.

Activity: Designing your own environmental quality survey

- Think of five headings for a quality survey of the environments shown in the two photographs on the opposite page. You can make sure the headings relate to both images by focusing on street quality. Add your headings to the grid in the criteria column.
- Complete the assessment and discuss your findings. How and why are there differences between your assessment and those of other students?

Tip

Environmental quality surveys are often weak because:

- Candidates use 'off the shelf' surveys, rather than developing their own.
- The surveys are not pre-tested before the fieldwork to make sure they work well.
- There are too many or too few numbers in the scales – and an 'easy' centre value.
- There is too much reliance on quality scores alone. It is better to use them with a range of other survey techniques as part of the fieldwork.

Designing your own environmental quality survey

Criteria	+3	+2	+1	0	–1	–2	–3

Land use mapping

Land use maps are special maps which record the type and location of permanent features on the ground. This could include roads, shops, types /ages of houses, railway stations, post boxes etc. In fact, you can customise or create a land use map to include any category you like, just as long as it is geographical. Land use maps can be linked to a number of Task questions so they are important techniques. The approach can be used in a variety of urban or rural contexts – see the examples below.

There are two main methods of recording land use – the grid method and the **transect** method. Your teacher should be able to help you understand how each method works, using a map of your local area.

The table to the right provides an example key to a land use map. Refer to the student book for more information and example maps (Ch. 18). They will help you to complete the following activities.

Activity: Advantages and disadvantages of the grid and transect methods

- Think about the advantages and disadvantages of the grid and transect methods.

Discussion point

Complete the table on the opposite page with the advantages and disadvantages.

Activity: Preparing for your land use survey

- Decide the categories of land use (e.g. retail, housing, open-space) that will be appropriate for your enquiry. Six to ten categories are usually enough, but think about any limitations of grouping different types of land use or of generalising. In the example above there are 14 categories (which is quite a lot). Write your categories in the box on the page opposite and choose a suitable colour for each one.
- Using a detailed map of your study area (e.g. Ordnance Survey 1:25,000) decide on the boundaries of the area that you will be surveying for your land use map, and draw them.

- Decide whether you will be using the grid or transect methods. Next, work out the measurements that will decide how many observations you will take. Grids, for example, may be 50–250 m across, but transects may use intervals of 20–100 m.

Symbol	Description
A	**Major shopping units**, e.g. department/variety stores
B	**Clothing and shoe shops**
C	**Convenience shops**, e.g. food, tobacconist, newsagent, sweets
D	**Furniture and carpets**
E	**Specialist shops**, e.g. books, sport, jewellers, electrical, hardware
F	**Personal services**, e.g. hairdresser, shoe repairs, dry cleaner, launderette, TV rentals, gas/electricity showrooms, travel agents
G	**Catering and entertainment**, e.g. pubs, cafés, hotels, cinema
H	**Car sales**
J	**Professional services and offices**, e.g. banks, solicitors, architects, doctors, estate agents, opticians, chemists, accountants
K	**Public buildings and offices**, e.g. school, library, town hall, church
L	**Transport**, e.g. car parks, rail/bus station
M	**Change**, e.g. vacant premises, derelict, under construction
N	**Residential**
P	**Industrial**

An example of land use classification for a city centre.

Advantages and disadvantages of the grid and transect methods

	Grid method for land use survey	Transect method for land use survey
Details of approach and method		
Possible advantages		
Possible disadvantages		

Preparing for your land use survey

Category	Colour to be used on the map

Using the Internet to obtain information

We have already looked at researching information from the Internet (page 18). Although it is an extremely valuable source of primary and secondary information, you must always choose information carefully.

Discussion points

Look at the selection of general websites listed below, which you may be using as part of your controlled assessment.

- Make brief notes about each one on a separate sheet of paper.
- Discuss how some of these websites might be useful in certain sections of your work. (Remind yourself about web-based GIS sites on pages 24–25.)

Office of National Statistics www.statistics.gov.uk	The ONS site is an excellent resource, which can be searched by area or postcode. It has downloadable datasets for a range of topics.
Field Studies Council www.geography-fieldwork.org	This site has a range of support for different field watch topics.
Up My Street www.upmystreet.co.uk	Put in your postcode to find out what your area is like. Good indicators such as geo-demographics, crime figures and property.
Wikipedia http://en.wikipedia.org/wiki/Main_Page	Wikipedia is the most popular online encyclopaedia, but it is not always totally reliable or unbiased because the contributions can be written by anyone. It is, however, peer reviewed and this does mean that contents are often checked by academics and other authors. Use the links to other websites as a way of finding out more.
Spatial-Literacy www.censusprofiler.org	This site provides a map of census data from 2008, showing the Super Output Area social classification. It is based on the Google Maps platform so is fully zoomable and you can select particular areas to compare.
Valuation Office Agency www.voa.gov.uk	The VOA site has information on council tax and business rates for any property in England and Wales. Good for urban investigations.
Check My File www.checkmyfile.com	This site has social information, based on Census data for any UK postcode – credit ratings, affluence, social grades, house prices and types, crime rates, health, ethnic mix, etc. Confidential, instant and no registration required. Good for quality of life surveys.

Activity: Websites to help you in your data collection

Complete the table on the opposite page:

- Find another four or five websites that will be useful when you are collecting your data. These sites are in addition to those you used in the research phase of the introduction. These sites may provide secondary data.
- Write down the name of the organisation that has supplied the data and the age of the data (if possible).
- Make a note of how this data could be used in your controlled assessment and which part it would relate to.

Your task statement:

Websites that will help you in your data collection

	Website URL	Organisation and age of data	How this can be used in the controlled assessment, and which part it links to
1			
2			
3			
4			
5			

Writing up the Methods of collecting data section

The Methods of collecting data section is where you show how, where, when and why you collected your data:

1. How and why? A description of the methods you used, emphasising *why* you used them and how they were suitable for your particular study.
2. Where and why? A description (including a map) of the locations where you collected data, explaining *why* these places were suitable for your study and what made them a good choice.
3. When and why? A record of the times and dates when you did the fieldwork, explaining their importance to the overall enquiry process.

HOW . . .
- All methods of data collection
- Details of the equipment and its use
- Your adaptation of the environmental quality sheets
- Technical details and precautions to ensure accuracy
- Your individual role – how you contributed to the process

WHERE . . .
- The decisions involved in choosing the sites
- A description of the sampling approaches
- How risk assessment influences controlling sites

WHEN . . .
- The time of year when the fieldwork was done
- The time of day when the fieldwork was carried out
- The length of time spent counting or observing, with reasons for choosing these times

Activity: Designing and completing a methods table

On the opposite page is an example of a template that could be used in your controlled assessment to show the methods you used. (It just shows the first three rows.)

- Complete the table for three methods/techniques.
- Suggest headings for one or two additional columns that might usefully be included and then complete them. (The example has two spare columns for you to fill in.)
- Refer back to your additional sources of secondary data, e.g. websites, magazines, etc. and make sure that they are mentioned in the methods.

Your methods section should not be too long – probably about 1 landscape page, possibly including a table and one or two photographs. Pictures of the equipment and its usage can be very informative.

Tip

The very best methods sections:
- Are usually supported by one or two well-annotated photographs showing use of equipment.
- Refer to a sampling procedure (either in a table or elsewhere).
- Comment on precautions to ensure the accuracy and reliability of the data-collection process.
- Show some initiative and individual comment even with group data.
- Refer to the student's individual contribution to the group.
- Justify particular approaches.
- May comment on sample size.

Designing and completing a methods table

	Method	Why this method was used (justification) and the purpose of the data that was collected		
1				
2				
3				

Top Tips
Photographs are good for showing the use of particular equipment or techniques. Remember – to be able to gain the highest marks you should annotate the photographs, explaining what they show.

Impellor spins to measure wind speed.

Anemometer held at the same height to ensure reliability.

Digital reading also shows temperature.

Managing safety

Managing safety	Safety issue
Crossing rivers (even small ones) can be very dangerous, especially in flood. Always follow instructions given by group leaders.	Hypothermia
If you take/have medication (e.g. for asthma or severe allergies) don't forget it when you are working out of doors.	Drowning
Be safe and sensible near roads. Rural lanes can be much more dangerous than busy main roads (because drivers may not be expecting you).	Money
Fieldwork is miserable if you are cold and wet. Wear appropriate clothing and take waterproofs. Shoes should be sensible and right for the job!	Medication
Always take a small amount of cash. It can be useful for using a payphone if your mobile stops working (or for buying an ice-cream).	Traffic
It's always a good idea when dealing with the public to have some form of ID, e.g. laminated card from school – it makes everyone feel safer.	'Herd mentality'
Sometimes, some students in a group can switch off from making their own decisions and lose awareness of their surroundings. It can lead to antisocial behaviour, e.g. not considering other users on pavements.	Identification

Carrying out risk assessment

Fieldwork is generally a very safe activity, but all actions involve some element of danger or risk. During the planning stage of your fieldwork your job is to look out for, minimise and manage any risks.

Activity: Managing safety

Using arrows, match the 'managing safety' comment to the appropriate 'safety issue'.

Activity: Produce your risk assessment

Fill in the table to produce an assessment of the likely risks for your planned fieldwork.

Produce your risk assessment

	Risk – the thing that has the potential to do harm	**Severity** – how bad a potential injury from the risk might be	**Management** – the plans in place or guidance to reduce the risk and the potential injury
1			
2			
3			
4			

Marks: 11 (22% of total marks)
Time: about 9 hours
Level of control: limited

4 Methods of presenting data

Understanding the mark scheme

This part of the mark scheme gives marks for two things:

- You have to choose the best way of displaying the information that you have collected. Here you can show off your initiative and originality as well as demonstrating various graphical skills. Quality, not quantity, needs to be your motto in terms of range and types of graphs.

This is what the mark scheme says about a limited and very basic/simple piece of work for a Methods of presenting data report:

Mark range	Descriptor
0	There is no evidence of data presentation.
1–4	A limited range of basic presentation techniques is used. The methods used are usually not appropriate.

This, however, is what the mark scheme says about a higher level, good (or very good) piece of work for a Methods of presenting data report:

Mark range	Descriptor
9–11	A wide range of presentation techniques is used, which is well presented and appropriate. Techniques are well presented, with scales and titles present on most techniques. A number of the presentation methods will be more sophisticated.

So to achieve the highest marks in this section you need to, first:

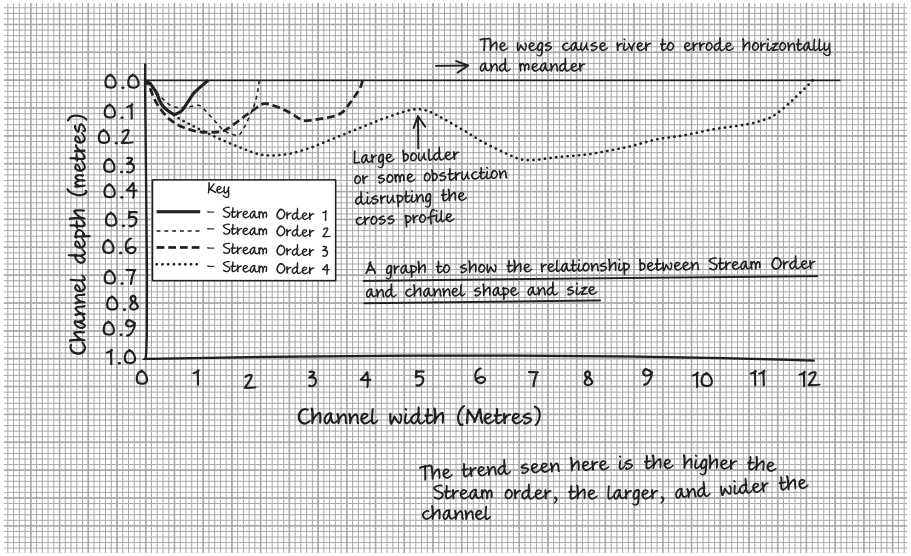
- Include a range of data-presentation methods (perhaps four or five) which are appropriate for your study.
- Present your data techniques in a neat and clear style (e.g. axes correctly labelled).
- Use some more sophisticated (complex) ways of displaying your data and information. Examples of these might include lines of best fit on a scatter graph or proportional pie charts overlaid onto a base map.

You should download and read this section of the mark scheme from the Edexcel website (www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx). Download the whole mark scheme, read it and keep a printout of it with this workbook.

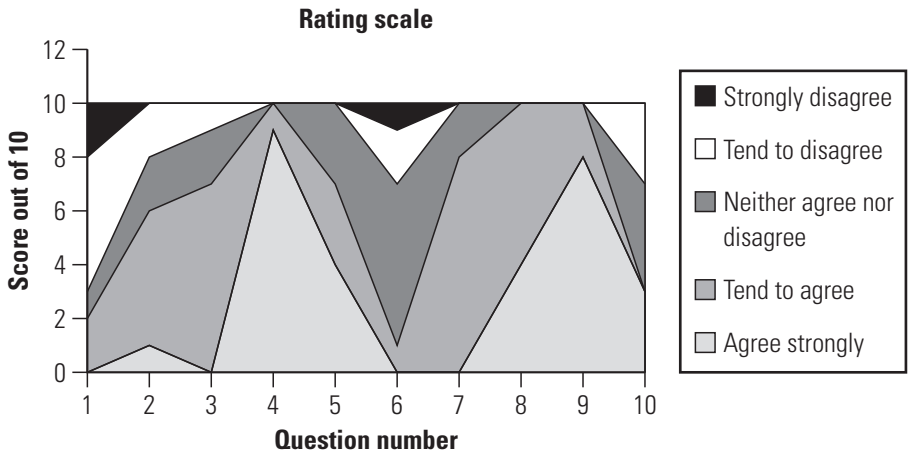
Activity

Read these two examples of extracts from students' data presentations, and then mark them using the mark scheme. For each one give it an estimated mark scheme range and then try to give it a mark. Write down your reason for that mark, using use words and phrases from the mark scheme to help you and say how you would improve the extract.

Example 1 – Extract from a graph in Methods of presenting data



Example 2 – Extract from a graph in Methods of presenting data



	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			

Data collation and summarising data

Before you can present the data you have collected, you first need to collate it (sort the raw group and individual data) and then select the information that is relevant to your study. The diagram below illustrates the steps you should take before data presentation.

(1) *Collect* all raw data from recording sheets (group and individual) → (2) *Collate* all data and combine in a spreadsheet → (3) *Select* data relevant to your study from the group spreadsheet → DATA PRESENTATION

You might want to include an annotated example of a completed recording sheet or part of a questionnaire in the main part of your report to show how you collected the data, but do not include actual recording sheets that you used during your fieldwork (though you may want to include one or two examples in an appendix).

Tally charts are often used when collating information (see example below). For example, when using questionnaires, they are a useful way of sorting and summarising data so that you can view the information you have, and then select which bits are important for your study.

Example of an extract from a tally chart for a survey of what goes into a household's dustbin.

	Paper/card	Plastic	Metal	Organic
Mon	III	I		IIII
Tues		II	I	𝍸 II
Weds	II	I		II
Thurs	𝍸			IIII
Fri				𝍸 I

Tip

Individual data should be clearly highlighted and separated from group data.

Try not to use too much of the group data which is irrelevant to the individual focus.

Tables can be use to summarise complex information. They can be any size or shape, as long as they are laid out in a sensible way. It is important to be clear so that the information is easy for the person reading the work to understand. Within a table use brief headings and put the units in the column header. Giving row and column totals may make it easier for anyone reading the work to interpret.

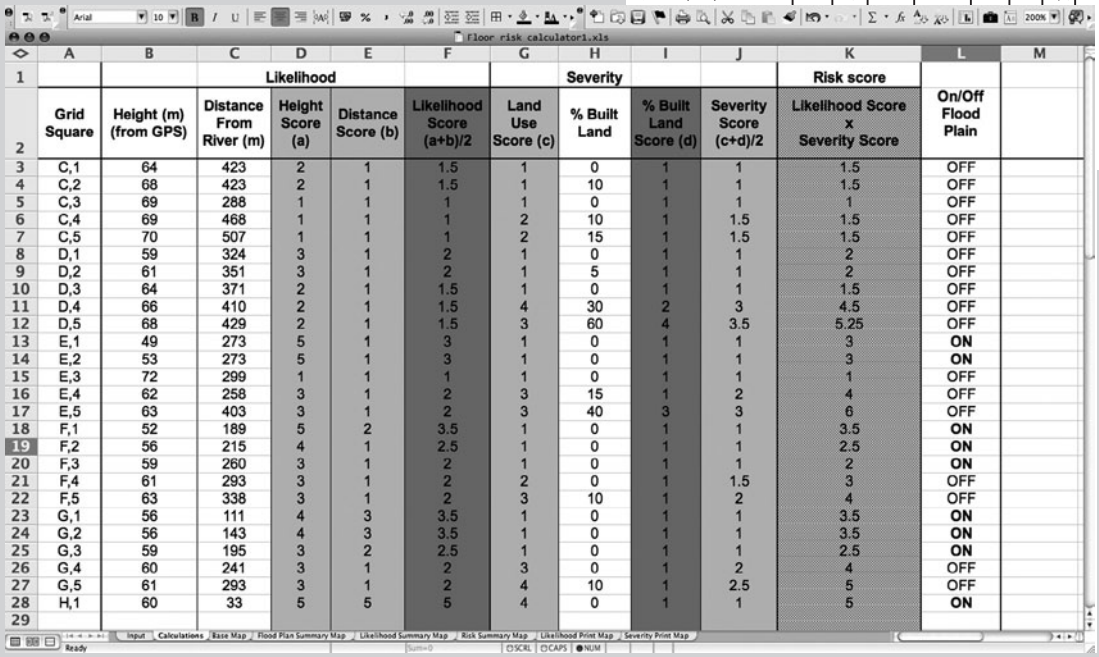
Group data: collation by hand and using a spreadsheet

It is very important to select the relevant data for your aims, questions or hypotheses from the group dataset. You should not include data which is not relevant to the aim, question or hypothesis you are answering.

Discussion point

What are the advantages and disadvantages of using a hand-drawn data collection sheet (such as the one on the right) compared with using a spreadsheet (such as the one below)? What is your group planning to use?

INFORMATION AVAILABLE FROM OS MAPS CENSUS TIMETABLE ETC. EXCEPT*								DATA COLLECTED USING INDIVIDUAL RI											
								SHOPS & SERVICES			HOUSE AGE				HOUSE TYPE				
VILLAGE	ALTITUDE (ms)	NODALITY	SL DIST/ASS (km)	RD DIST/ASS (km)	BUSES PER WEEKDAY	TRAINS PER WEEKDAY	GRADIENT (%)	% LOCAL	% TOURIST	% SHARED	PRE-1914 (%)	INTER WAR (%)	1945-70 (%)	1970-2001 (%)	TRADITIONAL SINGLE COTTAGE (%)	OAP (%)	BUNGALOW (%)	MODERN DET. (%)	MODERN SEMI (%)
HENRYD	40	3	3.6	5.3	8	0	5	100	0	0	0	2.5	42	33	14	0	33	14	8
ROWEN	40	4	6.5	8.8			12	44	23	23	0	14	50	33	33	0	0	50	1
TYN-I-GROES	50	5	6.5	4.8	30	0	3	60	20	20	0	10	30	60	20	0	10	30	4
LLAN BEDR Y C	50	3	8.3	9.5			9	33.3	33.3	33.3	20	40	20	20	60	0	0	0	2
TAL-I-BONT	10	4			52	0	20	43	14	14	9	31	46	14	0	13	4	24	
DOLGARROG	15	2	10	12.2	52		20	100	0	0	0	33	88	8	25	16	8	25	2
TREFIN	8	4	15.5	14.3	50	0	20	40	60	60	29.2	9.1	36.4	18.2	9.3	0	9.1	18.2	9
BETTWS Y C	12	13	0.4	2.8	119	13	19	2.5	69	69	68	8	28	18	88	0	0	112	8
LLANWRST	9	16			30		1	5.3	28	28	0	6	81	61	0	18	0	6	8
LLANDDOGED	140	4	13.6	15.5	6	0	10	100	0	0	14	14	29	43	14	0	0	57	2
HAENAN	20	4				0	14	33	64	64	29.6	25.5	31.5	15.4	51.4	0	25.9	20.6	2
								5	33	33	0	8	46	8	8	46	46	0	2
								0	0	20	0	16.6	50	33.3	33.3	0	0	16.6	6
								13	3	52	13	88	0	0	0	0	6	0	16
								.3	2.3	419.3	168.8	331.2	494.9	354.9	338.5	110	142	309.4	8
								3	8	29.95	12	23.7	35.4	25.4	23.5	4.86	10	22.1	



Floor risk calculator1.xls

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Likelihood					Severity				Risk score		
2	Grid Square	Height (m) (from GPS)	Distance From River (m)	Height Score (a)	Distance Score (b)	Likelihood Score (a+b)/2	Land Use Score (c)	% Built Land	% Built Land Score (d)	Severity Score (c+d)/2	Likelihood Score x Severity Score	On/Off Flood Plain	
3	C,1	64	423	2	1	1.5	1	0	1	1	1.5	OFF	
4	C,2	68	423	2	1	1.5	1	10	1	1	1.5	OFF	
5	C,3	69	288	1	1	1	1	0	1	1	1	OFF	
6	C,4	69	468	1	1	1	2	10	1	1.5	1.5	OFF	
7	C,5	70	507	1	1	1	2	15	1	1.5	1.5	OFF	
8	D,1	59	324	3	1	2	1	0	1	1	2	OFF	
9	D,2	61	351	3	1	2	1	5	1	1	2	OFF	
10	D,3	64	371	2	1	1.5	1	0	1	1	1.5	OFF	
11	D,4	66	410	2	1	1.5	4	30	2	3	4.5	OFF	
12	D,5	68	429	2	1	1.5	3	60	4	3.5	5.25	OFF	
13	E,1	49	273	5	1	3	1	0	1	1	3	ON	
14	E,2	53	273	5	1	3	1	0	1	1	3	ON	
15	E,3	72	299	1	1	1	1	0	1	1	1	OFF	
16	E,4	62	258	3	1	2	3	15	1	2	4	OFF	
17	E,5	63	403	3	1	2	3	40	3	3	6	OFF	
18	F,1	52	189	5	2	3.5	1	0	1	1	3.5	ON	
19	F,2	56	215	4	1	2.5	1	0	1	1	2.5	ON	
20	F,3	59	260	3	1	2	1	0	1	1	2	ON	
21	F,4	61	293	3	1	2	2	0	1	1.5	3	OFF	
22	F,5	63	338	3	1	2	3	10	1	2	4	OFF	
23	G,1	56	111	4	3	3.5	1	0	1	1	3.5	ON	
24	G,2	56	143	4	3	3.5	1	0	1	1	3.5	ON	
25	G,3	59	195	3	2	2.5	1	0	1	1	2.5	ON	
26	G,4	60	241	3	1	2	3	0	1	2	4	OFF	
27	G,5	61	293	3	1	2	4	10	1	2.5	5	OFF	
28	H,1	60	33	5	5	5	4	0	1	1	5	ON	
29													

An introduction to Methods of presenting data

Data presentation is all about showing off what you have found in an easy-to-understand way – but it is not about being too showy or flashy.

The key to getting the best marks for data presentation is choosing the most relevant and appropriate techniques. Maps and GIS, for instance, may be important for locating the study results, but tables can be very useful for summarising large quantities of numerical data. There are a number of important techniques that you could try to include:

	Maps and GIS	Tables	Photos and sketches	Graphs
What is the most appropriate use?	These should be used to show locations and patterns. Mini-graphs and charts can be overlaid onto maps.	These can be used to group and summarise numerical data that has been collected, once you have chosen the relevant data.	These help to give the reader a visual context. They should be properly annotated and labelled.	These help to summarise numerical data, showing patterns and trends. They may also show unusual data (anomalies).
Where are they discussed in this workbook?	Pages 60–61	Page 52	Pages 34–35	Pages 56–59

Discussion points

The box on the right shows some climate data for York.

- What technique should be used to display the 'temperature' and 'precipitation' data? How can these be put onto one graph?
- What is the best way of showing the 'number of wet days'?
- Discuss which graphical methods would be inappropriate.
- What are the advantages and disadvantages of using spreadsheets to create graphs?

	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	4	4	6	9	12	15	18	16	15	11	5	5
Precipitation (mm)	60	55	30	41	35	50	55	70	62	57	52	49
Number of wet days	15	12	13	15	17	19	15	16	14	15	15	13

Activity: Which presentation technique should I use?

Look at the first column on the opposite page and identify the types of information you are using. Choose the techniques that are most appropriate for your data, and fill in the blank column with details of what you will use them for. Some of these techniques are explored on pages 55–59, but you will need to do some additional research to help you use them (which could get you marks for initiative).

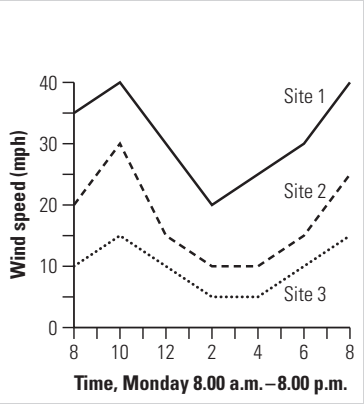
Which presentation techniques should I use? (Ways of displaying data that tend to be more sophisticated or complex are highlighted)

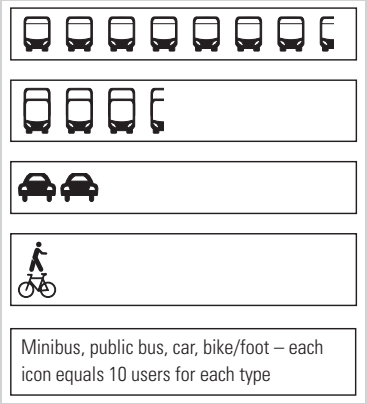
	Type of information	Possible techniques to show it	The techniques I will use
1	The location of the study, the fieldwork sites, the geographical context and introduction to the issue.	• Field sketches • GIS/digital base maps (e.g. OS) • Tables • Flow maps	
2	Large quantities of numerical data that need to be organised and collated into a manageable form for data processing.	• Data entry to a spreadsheet • Tables, e.g. in Microsoft Word	
3	Data that shows changes over time, e.g. temperature over a year or pedestrian flows during the day.	• Line graphs • Circular graphs/rose diagrams • Pictograms	
4	Numerical data for sites that has categorical value (can be continuous data, e.g. histogram, or different categories, e.g. for a bar chart).	• Bar charts and histograms • Composite graphs • Pie graphs • Mirror graphs • Kite diagrams	
5	Data that has an orientation or compass direction, e.g. wind strength and direction or pebble orientation.	• Rose diagrams/circular graphs • Polar coordinates	
6	Data collected to show spatial variation of movements and flows, e.g. traffic movement along a road or sphere of influence of a shopping centre.	• Composite bars • Flow lines • Desire lines	
7	Data collected along a survey (transect line). Commonly used for showing relationships/**correlations**.	• Scatter graphs • Profiles and cross-sections • Kite diagrams • Mapping and divided bars	
8	Data that has been collected to show spatial variation, e.g. map showing the concentration of shoe shops in a town centre.	• Dot maps • Symbols and proportional symbols • Choropleths and isopleths	

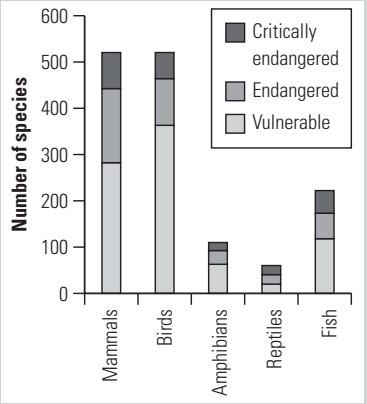
Commonly used techniques: line graphs, bar charts, pie charts and pictograms

Line graphs, bar charts, pie charts and pictograms are very popular because they are quick and easy to draw, but also because they have so many uses.

- Line graphs are useful for showing changes over time.
- Bar charts show totals. Pictograms are the same but more visual.
- Divided/proportional bar charts and pie charts display the relative sizes of the different parts that make up the total.







A line graph, a pictogram and a divided bar chart.

Discussion point

It is relatively easy to draw some of these types of graphs but many people make basic mistakes. In the space on the right, create a list of 'golden rules' that should always be followed when constructing graphs.

Activity: Why do you think some of these are often considered basic presentation techniques?

The graph on the opposite page shows the average depth of a river (the Hogsmill), at eleven different sites.

- Add annotations round the diagram to show what you think of this presentation technique. Use one colour for your positive comments and another colour for your negative comments.
- Can you think of an alternative way of showing the same information? Is your way better?

Golden rules for constructing graphs

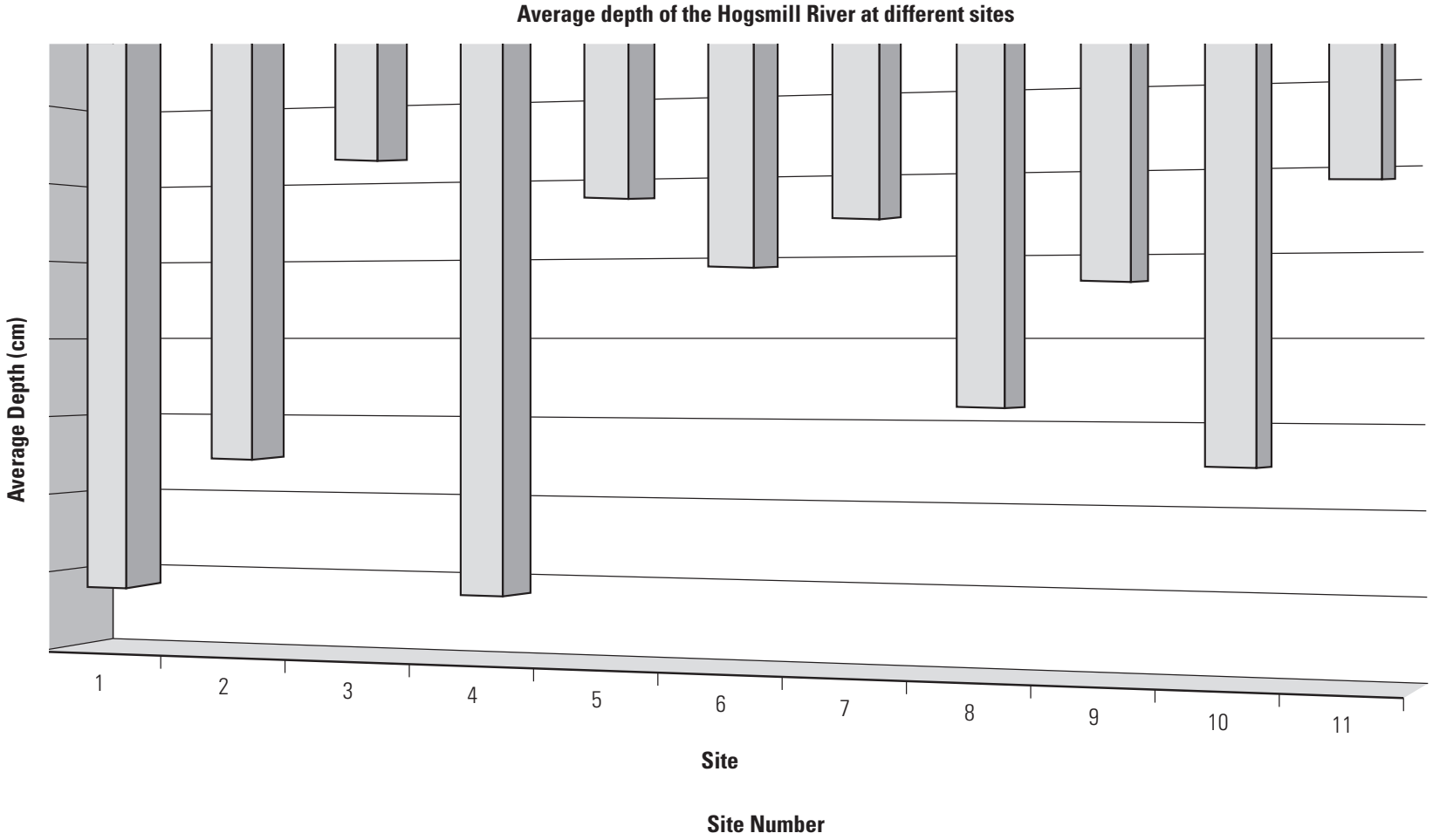
Rule 1

Rule 2

Rule 3

Rule 4

What do you think of this sophisticated techniques?



An alternative technique that could be used is…

More sophisticated techniques

Generally, if you use more complicated, innovative techniques in your data presentation section you *could* get more marks. However, the techniques must be appropriate and show something more than a simple technique could show. Pie charts, for example, can be made more sophisticated by locating them onto a base map (e.g. using GIS) or by making their size proportional to the relevant totals. The pie charts on the opposite page use these techniques.

Whatever technique you choose, it needs to be clear and easy to understand. It is tempting to use as many different presentation techniques as possible – but this is not a good idea if the different types of graphs and charts don't actually help to make things clearer.

Activity: Graphical techniques

Decide which of the graphical techniques below are relevant to your controlled assessment. Then, in the space on the right, explain how they are constructed and list their advantages and disadvantages.

- Kite diagrams
- Compound and block bar charts
- Choropleth maps
- Triangular graphs
- Scaled cross-sections of rivers, valleys or landforms
- Desire lines, flow lines and star diagrams
- Isoline maps

Activity: What do you think of these more sophisticated presentation techniques?

The figures on the opposite page show two ways of representing flows – one is used here for traffic, the other for a river.

- Add annotations round each figure to show what you think of the presentation technique. Use one colour for your positive comments and another for your negative comments.
- Can you think of any other ways of showing the same information? Are your ways better?

Tip

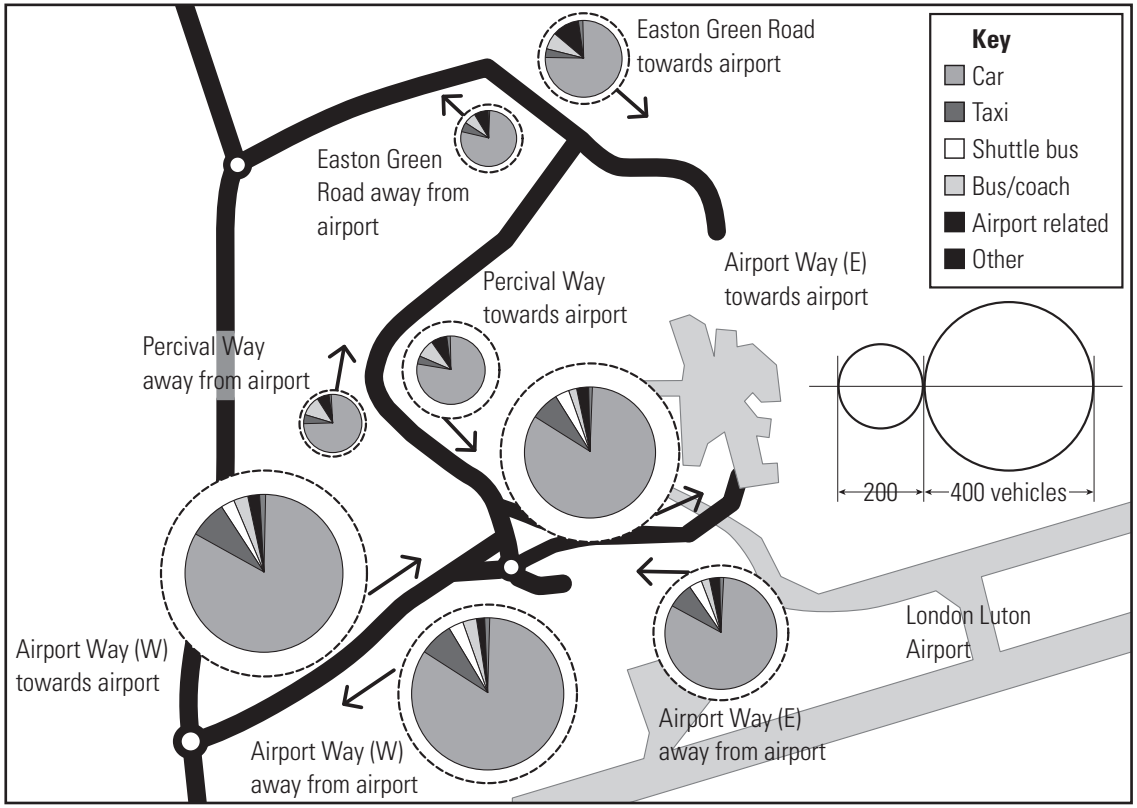
Work awarded the highest marks for data presentation normally follows these rules:

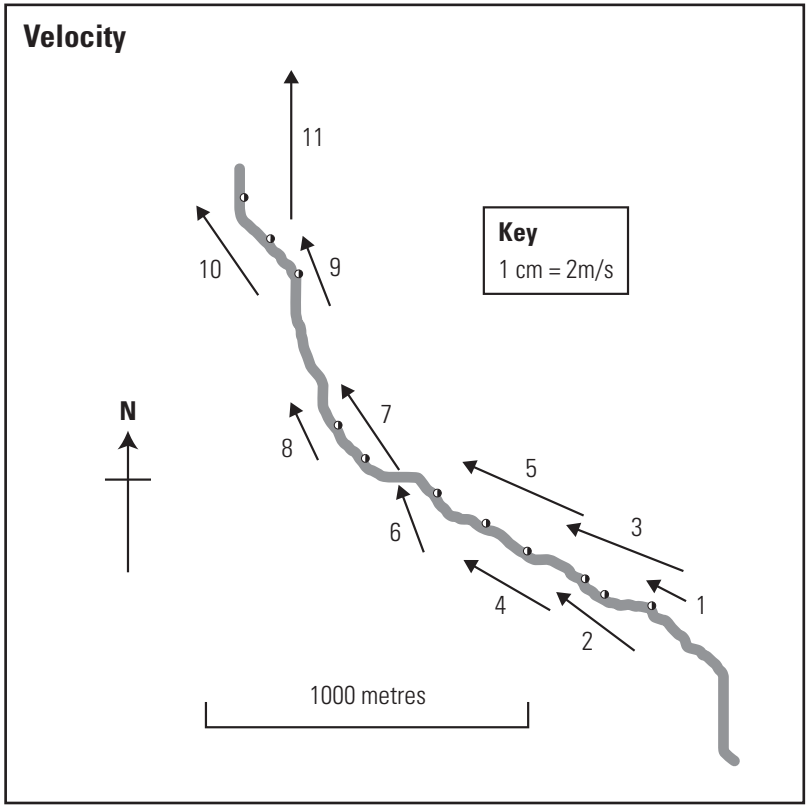
1. The 'independent variable' (e.g. time) is plotted on the horizontal (*x*) axis and the 'dependent variable' is plotted on the vertical (*y*) axis. Also, the controlling variable should be on the *x* axis.
2. Scales are clear and labelled, allowing the full range of data to be plotted.
3. Graphs have a full, explanatory title.
4. Graphs with multiple lines or data use different colours and symbols for clarity (and may have two vertical axes).

Graphical techniques

Technique	How to construct	Advantages/ disadvantages

What do you think of these more sophisticated techniques?





Using GIS and/or visualisation as a tool to present fieldwork data

Remember that you are required to show you have used GIS/visualisation in your controlled assessment. This will probably be in your Introduction or in this section (ideally in both).

You can use online and more sophisticated GIS as a valuable tool to help you present your fieldwork data. Using Google Earth, for example, it is possible to attach maps, photos, text, data, routes and video links to aerial photographs by inserting simple html codes into the GIS system. You could even record a tour to form part of the final controlled assessment work. There are many references to this online.

This table shows some of the skills sheets that you can download (for use with Google Earth version 4.3 or later).

1	Finding places	Use the search engine to fly to a place.	Beginner
2	Using the 3-D viewer	Navigate your way around using the rotate, look, move and zoom controls.	Beginner
3	Using layers	View the additional information contained in layers created by Google.	Beginner
4	Opening saved placemarks	Open Google Earth placemarks that you have saved from another source.	Beginner
5	Creating a placemark	Create and edit your own placemarks, and add labels and descriptions.	Intermediate
6	Organising, saving and touring placemarks	Save your placemarks in a folder and tour them.	Intermediate
7	Creating a path	Draw, label, format and describe a route between two or a series of points.	Intermediate
8	Measuring distance	Find out the distance between two points or the length of a path in a range of units.	Intermediate
9	Advanced placemarks	Format placemark text and add images, video and weblinks.	Advanced
10	Creating a polygon	Draw a polygon to highlight a particular area and create a 3-D shape to represent different values.	Advanced

Discussion point

Bearing in mind your school situation and your own situation, consider the advantages and disadvantages of using GIS and/or visualisation in your particular investigation.

More advanced examples of using Google Earth

Google Earth can be used to add shapes to the graph (polygons) so that they appear as 3-D shapes. You can show the results of fieldwork data such as pedestrain counts, with higher bars indicating more people. Polygons can also be used to create land use maps, where they are colour-coded. These types of graphical techniques would be rewarded with high marks if they are used appropriately.

Additional programs such as GE Graph can also be used to add more complex graphs to Google Earth. This may be worth using if you are more familiar with Google Earth.

There are a number of other full GIS packages that can be used, e.g. ArcGIS.

Marks: 9 (18% of total marks)
Time: about 6 hours
Level of control: high

5 Analysis and conclusions

Understanding the mark scheme

Analysis means describing your data, but more importantly (and often harder) also explaining it – making links and suggesting reasons. In your conclusions you will return to the aims, questions or hypotheses that you set up in your introduction.

This is how the mark scheme describes a limited and very basic/simple piece of work for Analysis and conclusions:

Mark range	Descriptor
0	There is no analysis or conclusion.
1–3	Data has been extracted and described. Some basic conclusions have been drawn, which vaguely relate to the question or issue investigated.

This, however, is what the mark scheme says about a higher level, good (or very good) piece of work for Analysis and conclusions:

Mark range	Descriptor
7–9	There are analytical comments, which draw together the student's findings. The conclusions are accurate and substantiated and refer to the correct theory where appropriate.

So, to achieve the highest marks for analysis you need to:

- Analyse your data in detail using appropriate techniques:
  - Stage 1: Briefly describe what you have found, supported by numbers from your data.
  - Stage 2: Explain the reasons for what you have found and the patterns in your results.
  - Stage 3: Make connections between the different parts of your data and identify any links to geographical theory.

And to achieve the highest marks for the conclusions you need to:

- Provide clear, relevant and focused conclusions including evidence to support your statements.
- Link your conclusions back to the original aims of your investigation, and possibly theory.
- Try to comment on the wider geographical significance of your study, i.e. how it fits into the wider picture.

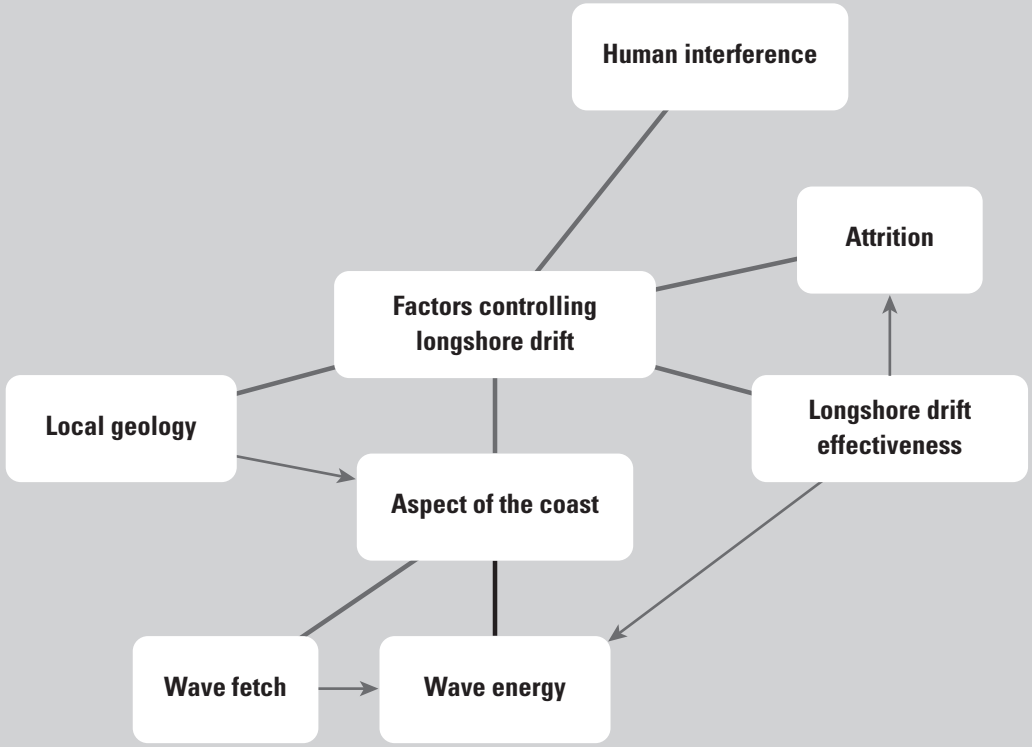
You should download and read this section of the mark scheme from the Edexcel website (www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx). Download the whole mark scheme, read it and keep a printout of it with this workbook.

What is analysis?

Your analysis section describes and explains what you have found. This is where you pick out patterns and trends, and look for any anomalies – unusual items of data which do not fit the pattern of results you expected to find. In analysis you also try to find links between your different sets of data. You will then suggest how any distinct patterns may be produced by a particular process or feature. Use simple statistics to help highlight these patterns where they appear (see page 64).

The definitions below are some of the words often used in analysis. You could use these as a checklist for your analysis.

Analyse	Break up into parts; investigate; think something through
Compare	Look for similarities between
Contrast	Show the differences between
Describe	Say what you see; use numbers and data to give detail
Discuss	Consider or examine a subject; give reasons for and against particular findings using arguments; examine the implications
Examine	Look closely into something you have found, so that you can describe and explain it
Explain	Make clear; give the reasons for something
Explore	Examine thoroughly; consider from a variety of points of view
Illustrate	Show an idea, using examples and evidence; provide maps, diagrams, etc.
Interpret	Show the meaning of something; make sense of it
Summarise	Give a short account, showing the main points



Concept map of factors affecting longshore drift along a coast

Analysis is one of the hardest parts of the controlled assessment. You need to look through all of the work and results that you have collected so far and it can help to make a simple concept map of any links you have found. The example above is a concept map about the factors that might be controlling longshore drift on a stretch of coast.

Activity: Complete a concept map for your enquiry

Either on paper or using a computer (e.g. using www.bubbl.us/index) construct a concept map for your enquiry, and then put it at the back of this book.

Stage 1 Describing what you have found: comparing and summarising data using number analysis

You can use simple statistics to improve the quality of your analysis. This helps you to make analytical comments. You don't have to be a great mathematician – just some basic number skills are enough for most techniques.

Here are some standard questions that you could ask about any data set. These can help to focus your analysis.

1. What is the range (spread) of values in the data set?
2. Is there an area where most of the values are concentrated (i.e. is there any clustering)? If so, where?
3. Are there any clear gaps between the clusters?
4. What is the shape of the distribution of values (i.e. how are the values spread out)?
5. Are there any extreme values (which may include anomalies)? How much are they separated from the rest of the 'normal' data?

Modes, means and medians

There are many ways of looking at data, but the simplest are measures of 'central tendency' – ways of finding the number that is the 'centre' of a set of values. Mode, mean and median all give a number that can represent the typical or average point in a set of data.

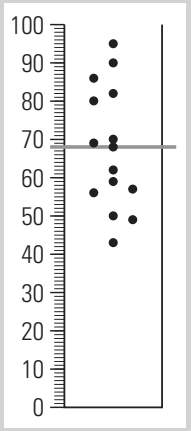
Mode	This is the number that appears most frequently in the data set. If a data set is organised into groups it can be displayed as bars on a bar graph or histogram – and the mode is the highest bar. It can be useful as an early indication of where most numbers are concentrated. For example, if a set of values is 6, 3, 1, 5, 7, 9, 7, 1, 2, 4, 7 and 8, then the mode is 7, because it appears more frequently than any other value.
Mean	This is the most common measure of central tendency and is the arithmetic average of the values in the data set. To calculate the mean you add all the values together and then divide by the number of values there are. The advantage is that all values are taken into account, but the mean is influenced by any outliers or extreme values. In a primary school classroom, for example, with 20 children aged 5 and a 47-year-old teacher, the mean age is 7 – but nobody in the room is 7.
Median	This divides the data set into two halves. To find the median you need to order the data and then count to the middle value. This is easier if you have an odd number of values. If you have 41, for instance, the median is the 21st value – separating the top 20 values from the bottom 20. If you have an even number of values , however, you will have two 'middle' values. You must add them together and divide by 2 to produce the median. For example, with values 3, 6, 2, 7, 9 and 4, the median is found by first ordering the values: 2, 3, 4, 6, 7, 9 and then – because there are an even number of values – adding the middle two together (4 + 6) and dividing the result by 2. The median is therefore 10 ÷ 2 = 5.

Stage 1 Describing what you have found: dispersion graphs and ranges

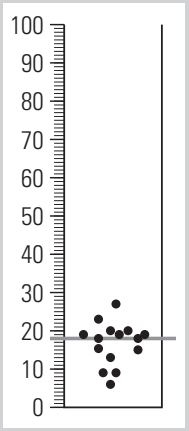
The spread or range of a set of data can easily be seen using a dispersion graph. It's a really good technique for comparing the data at two or more sites and is simple to make:

1. Draw a column for each site. In the example below there are two sites (A and B) which are points on a beach where measurements of stone length have been taken (in mm).
2. Choose a scale which covers the range of values. (You don't always have to start at 0.)
3. Plot the data in the centre of the column with a dot. Where there is an overlap, move the dot slightly to one side.

The median for the two areas has been calculated and shown by a horizontal line on the graphs (site A = 68, Site B = 18).



Site A



Site B

Site A	Site B
95	27
90	23
86	20
82	20
80	19
70	19
69	19
68	**18**
62	18
59	15
57	15
56	13
50	9
49	9
43	6

Raw data for Sites A and B

Activity: Adding to a description

- Calculate the following measurements for sites A and B and write them on the right.

  (i) The mean for site A and for site B (use the raw data above).

  (ii) The range of the data. Range is the difference between the highest and lowest values.

- Write some comparative sentences (see pages 66–67) describing the differences in the data for sites A and B.

You can extend your analysis of this type of data by using additional techniques including calculating quartiles (upper and lower), the inter-quartile range and standard deviation. If you want to use these techniques, you should find out about them before the high level of control. Remember you can also use a spreadsheet to help you calculate these statistics.

Adding to a description

Site A

Mean:

Range:

Site B

Mean:

Range:

Comparative sentences

Stage 2 Explaining what you have found: the language and structure of analysis

When you write your analysis, you should have a clear and logical layout. Start with an introductory idea and then write about each point in more detail, describing and explaining them all (see the flow diagram on page 75). As you write, think about the following things:

The order of your ideas: Write about your findings in a logical order. For example, if you are writing about a line graph, first describe any patterns or trends (linked to the axes), then use figures from the graph to illustrate what you have found. In the example below the numbers and their units have been highlighted, and the highest and lowest values have been given, to show how specific you need to be.

Figure 5 shows the relationship between average velocity and the cross-sectional area (CSA) of the channel at each progression in stream order. This is a positive relationship. It shows that as stream order progresses, cross-sectional area increases, and so does river velocity. With a cross-sectional area of 0.25 m^2 there is a velocity of 0.27 m/second, but with a CSA of 3.25 m^2 the velocity goes up to 0.44 m/second. The highest velocity is 0.64 m/second, and the lowest is 0.27 m/second.

Tense: Write your report in the past tense, e.g. 'The most important features were the recycling facilities near the supermarket'.

Style: Avoid using the first person (I or we). For example, rather than 'We did ten environmental quality samples at intervals', write 'Ten environmental quality samples were taken at intervals'.

Explanations: It is important to include geographical terminology whenever appropriate to explain your findings. In this good example below, the more specialist vocabulary is in *italics*. This would be well rewarded for its clear geographical explanation.

This links back to the previous analysis of stream *gradient* and how it relates to the *graded long profile*. *Cross-sectional area* typically increases in the lower section of the *long profile*. According to the Bradshaw Model, this is where *load particle size* and *channel roughness* are very low, meaning lower levels of *friction* and therefore higher *velocities*.

Connectives: These are words that link ideas together. When they are used correctly, they can help you to achieve higher marks as they show a high level of understanding. Have a look at the list of connectives opposite.

Activity: Using connectives

Tick off the connectives as you use them in your analysis. If you use them more than once then put further ticks next to them, but make sure that you use them in an appropriate way.

Stage 3 Explaining what you have found: connectives

Cause and effect

- as a consequence ☐
- as a result of ☐
- consequently ☐
- inevitably ☐
- initiating ☐
- precipitating ☐
- resulting in ☐
- the effect of this is ☐
- the result is ☐
- this results in ☐
- this, in turn, causes ☐
- triggering ☐

Time

- after ☐
- as a result of ☐
- at the start ☐
- eventually ☐
- first, . . . secondly ☐
- later ☐
- meanwhile ☐
- next ☐
- then ☐
- twenty years on ☐

Emphasis

- above all ☐
- especially ☐
- in fact ☐
- in particular ☐
- indeed ☐
- mainly ☐
- most ☐
- most significantly ☐
- mostly ☐
- notably ☐
- significantly ☐
- unfortunately ☐
- usually ☐

Comparing

- also ☐
- as with ☐
- equally ☐
- in the same way ☐
- like ☐
- likewise ☐
- similarly ☐

Contrasting

- alternatively ☐
- although ☐
- despite this ☐
- however ☐
- instead of ☐
- nevertheless ☐
- on the other hand ☐
- otherwise ☐
- though ☐
- unless ☐
- unlike ☐
- whereas ☐
- while ☐

Adding

- and ☐
- another ☐
- as well as ☐
- following ☐
- in addition ☐
- moreover ☐
- so ☐
- then ☐
- too ☐

Evaluating

- despite this ☐
- however ☐
- nevertheless ☐
- on the other hand ☐

Persuasion

- certainly ☐
- clearly ☐
- evidently ☐
- obviously ☐
- of course ☐
- undoubtedly ☐

Summing up

- in conclusion ☐
- on the whole ☐
- overall ☐
- to sum up ☐

Examples

- for example ☐
- for instance ☐
- in the case of ☐
- revealed by ☐
- such as ☐

Logic

- as a result of ☐
- because ☐
- however ☐
- in fact ☐
- therefore ☐
- this shows ☐

Balancing

- alternatively ☐
- although ☐
- however ☐
- instead of ☐
- nonetheless ☐
- though ☐
- unless ☐
- unlike ☐
- whereas ☐
- while ☐

Source: Juliette Andrew-Evans, *Writing in Geography*, Shropshire County Council 2007

Showing and testing relationships: scatter graphs

If you have collected two sets of data that you think are related, (e.g. changes in quality of environment and distance out from the town centre) then you can draw a single scatter graph to display their relationship in a visual way. Scatter graphs are really part of the analysis as they help you see how good a relationship (or correlation) actually is.

How to draw a scatter graph:

1. Construct the axes. In these diagrams, Variable 2 is the independent variable, e.g. distance, time, etc. This should go onto the *x* (horizontal) axis. A dependent variable is one that is influenced by the independent variable, this could include number of pedestrians, quality of environment or the width of a river. An independent variable is one that influences the dependent (chosen) variable (Variable 1 here).
2. Decide on appropriate scales and then plot the values as crosses or points. Remember – do not join up the points.

Once the data is plotted, describe the strength of the relationship. Graphs 1–4 show the main types of relationship you can expect to find in scatter graphs. For Graphs 2, 3 and 4 it is possible to draw lines of 'best fit'– this is another part of the analysis which you can use when you suspect that data is linked in one way to another set of data.

Discussion point

Why should you not put a line of best fit on Graph 1?

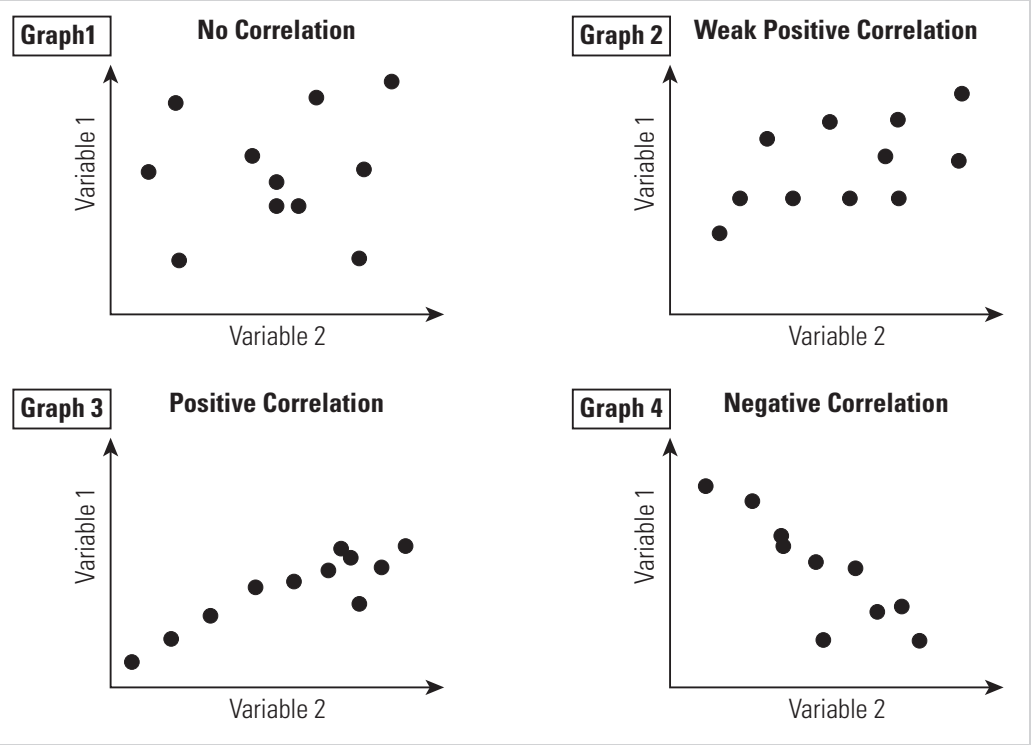
Top Tips

Remember, there are limitations to correlations as they don't necessarily show cause and effect.

You can use a spreadsheet to work out the line of best fit (if the data is plotted in the form of a scatter graph), and many spreadsheets will also calculate a correlation coefficient. This will allow you to see statistically how well the data sets are linked. This can be used under high level of control.

Activity: Lines of best fit

Trace Graphs 2, 3 and 4 and draw on the possible lines of best fit.



Starting to write your analysis: a flow diagram for success

In your analysis you will probably base most of your paragraphs on the individual figures (maps, graphs and diagrams) that you produced in your Methods of presenting data section. Give each diagram a figure number and integrate it with your analysis to make the whole piece of work become more like a professional report.

You should use the flow diagram below (which shows the three stages of analysis) to help you structure your paragraphs. Stage 1 is the easiest bit – just describing. Stage 2 gives more detail, and then Stage 3 extends the analysis to a higher level.

Activity: Starting to write

Follow the stages below, using your own analysis, to begin your writing on the opposite page.

For each graph, diagram and figure in turn…

Stage 1: Describe what you have found

- Begin by describing simply what each figure shows.
- Quote number values and data to support what you are saying.
- Try to identify the most important bits of information, e.g. biggest, smallest, most unusual.

Stage 2: Explain what you have found

- Give more detail and then try to explain what the data shows.
- Try to give reasons for the patterns you have found.
- Use connectives where appropriate. (Look at the checklist on page 67.)

Stage 3: Make links and connections

- This is where you can begin to extend the analysis (see pages 66–67).
- Look for similarities, patterns, trends and relationships between this data and other data, and explain why these may have developed.
- When looking at two sets of data, try to see whether there is a relationship between them and how strong this link is (see pages 68–69).
- Identify any links to geographical ideas.

Stage 1: Example extract

…Figure 1 shows that there is an increase in the river's discharge from site 1 to site 6. At site 1 the discharge is 0.07 m^3/second, whereas at site 6 it has increased to 0.26 m^3/second. Site 5 is unusual, however, since there is a slight drop in discharge by 0.05 m^3/second, compared to site 4.

Stage 2: Example extract

…There are a number of possible explanations for the patterns in the data shown in Figures 1–3. Increases in discharge are due to more water entering the drainage basin lower down the river's course. More tributaries carry water through the system, increasing the total volume of water present.

Stage 3: Example extract

…Both discharge and velocity show increases downstream – there is a strong positive relationship between the two (see scatter graph – Figure 3). The geographical theory supports this idea, as there is a natural link between velocity and discharge. As one increases, so does the other, i.e. more water = faster speeds.

Starting to write

Stage 1: Describing what you have found	Stage 2: Explaining what you have found	Stage 3: Making links and connections

Activity

Read these two examples of extracts from students' data analysis, and then mark them using the mark scheme on page 62. For each one, give it an estimated mark scheme range and then try to give it a mark. Write down your reasons for that mark, using words and phrases from the mark scheme to help you and say how you would improve the extract.

Example 1 – Extract from a section of data analysis

… some smaller than the previous site, however there are some large boulders at this site. This can be explained in two ways. The higher discharge of the larger channel means the transportation of these boulders is easier at this point, but also a change in local geology means that a different (harder) rock type is now seen and is harder for the river to erode.

The trend is 'the further downstream you go, the smoother the channel (change in hydraulic radius)'. This is because, as you go further downstream, more and more erosion has taken place, leaving more rounded and smoother bedload (attrition), which is also small enough to be transported with only a little energy. This makes it possible for the sediment to collide with the channel sides and create a smoother channel. Potential for erosion (and a smoother channel) is increased by the reservoirs – these clean the sediment from the river and oxygenate it. This increases the amount of energy the river has for erosion and so more of this takes place. This is known as clear water erosion.

Example 2 – Extract from a section of data analysis

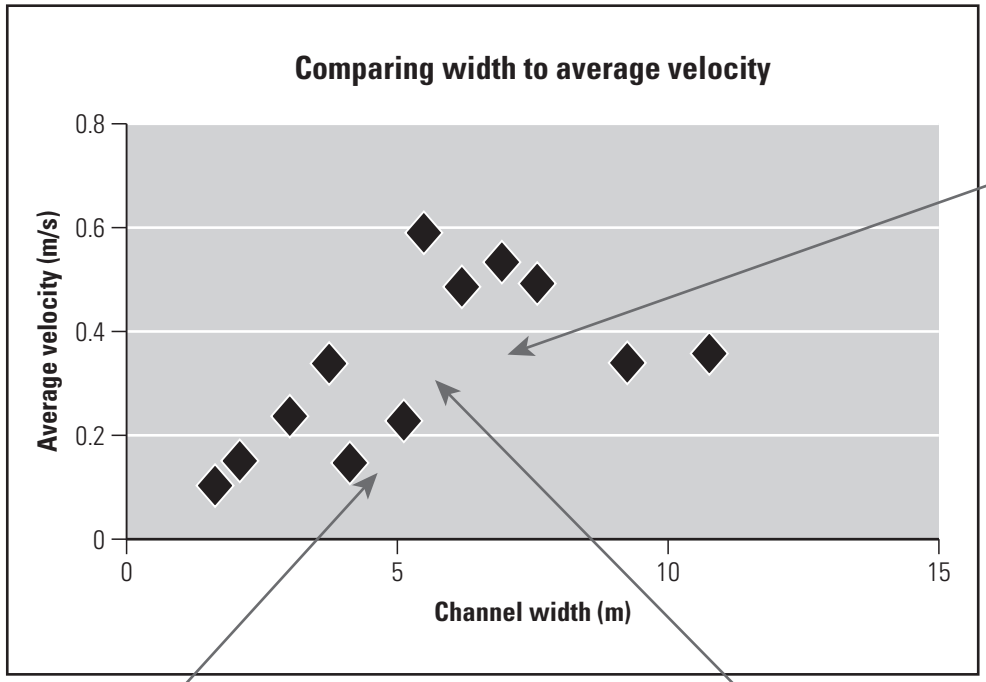


Figure 4

In general this graph supports the Bradshaw model in that, as channel width increases, so does average velocity. Both these factors would increase with distance downstream.

As velocity increases so does channel width, as channel width and velocity are greatest downstream. This should be where the channel efficiency is greatest, so I can assume that channel width influences channel efficiency.

Activity

	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			

Writing your conclusions

When you have finished writing your analysis, leave yourself some time to stand back and look again at your report so far. Read the analysis through again and make notes before you start writing your conclusions. Conclusions need to refer back to the original aim, hypothesis or questions.

There are several important things you need to do in your conclusions:

- Summarise the main things that you have discovered.
- Relate your findings back to the aims of your investigation (both the main aim and task statement, and any smaller sub-aims you chose). Have you been able to answer the original question? What is your answer?
- Summarise your conclusions clearly and concisely, including any evidence that backs them up. State your overall conclusion, which must be linked to the task statement.
- Comment on the wider geographical significance of your study, e.g. why the study might be important, whether your results could be useful to others.

And two final points which might help you:

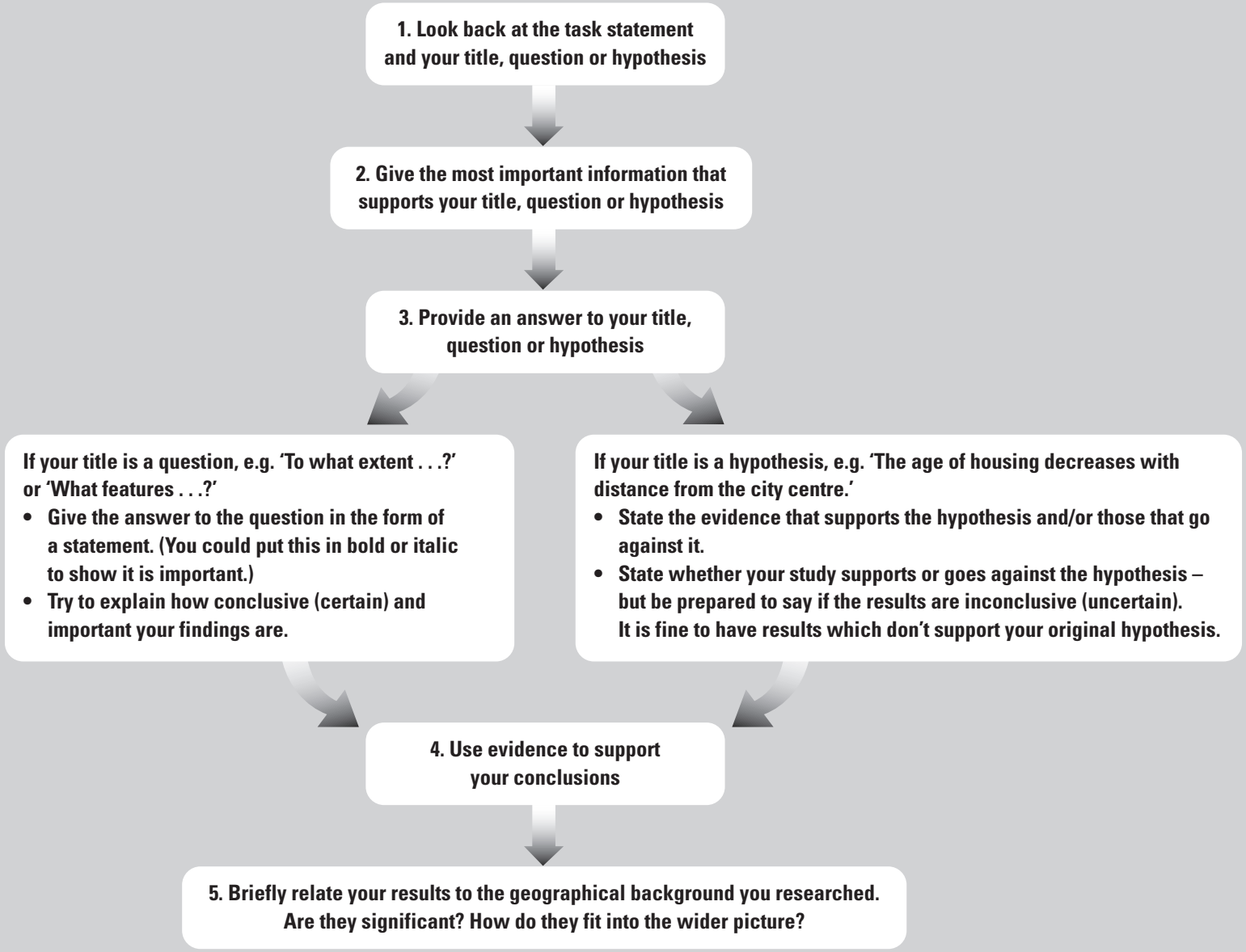
- Using some of the key words and terminology that you used in the introduction is important in this section.
- Don't introduce any completely new ideas in your conclusions.

Activity: Planning your conclusions

Re-read your analysis and think about what to include in your conclusions. Use the points above and the flow diagram opposite to make notes on what you will include in the column on the right.

Notes

Flow diagram for producing your conclusions



Activity

Read these three examples of extracts from students' conclusions, and then mark them using the mark scheme. For each one, give it an estimated mark scheme range and then try to give it a mark. Write down your reasons for that mark, using words and phrases from the mark scheme to help you and say how you would improve the extract.

Example 1 – opening section from a conclusion

From the data we collected on our fieldwork day it is clear that the Darwin shopping centre is having an impact on the shops in Shrewsbury to some extent. Darwin is a well-designed and pleasant shopping place with a cover so that tourists don't get wet. Shrewsbury has lots of individual shops (low Clone score) but can be wet when it is raining. It is also affected by some of the traffic. Our results showed that more people were shopping in Darwin compared to Shrewsbury, but that may have been affected by the lack of shopping facilities in the Darwin centre compared to Shrewsbury. I like Shrewsbury more as a place.

Example 2 – final section from a conclusion

The recycling facilities in Taunton are a new development. Kerb-side collection is a heated debate, especially where it is costly in rural areas such as Somerset. The 'eco-footprint' of collection may actually outweigh the benefits of waste reduction.

Perhaps a logical follow-up to this study would be:
- a more in depth analysis of waste recycling
- a study of the environmental impact of driving to collect people's plastic, paper, etc., and whether this could be done more centrally.

The picture in Somerset is actually part of a much bigger debate about waste management and recycling. For example, The States of Guernsey have decided not to invest in a kerbside scheme, saying it was too costly (http://news.bbc.co.uk/1/hi/world/europe/guernsey/8284494.stm). Some areas, however, are trying to go for 'total recycling' e.g. in Cornwall (http://www.recycleforcornwall.org.uk/recycle/totalrecycling/).

Example 3 – middle section from a conclusion

There are significant variations along the rural-urban continuum, in settlements west of Penrith. My results also fit closely to Cloke's index of rurality. The variations between the urban area and extreme rural area are obvious:

– The urban area of Penrith has a wide range of services, including shops, schools, churches and a train station. It has excellent infrastructure, with the A66 linking Penrith to surrounding villages and the train station has a direct link into London.

– Stainton is an example of an extreme non-rural area as it lies on the outskirts of Penrith, situated along an 'A' road. There are very likely to be a large number of commuters in the area and there is a quick bus link into Penrith. The village has a large range of services for both tourists and residents.

– An intermediate rural area is Penruddock, which is on a 'B' road. It is quite a remote village but is popular for tourists, as it holds the All Saints' church. It has a limited number of services, and the services available are very basic. For example, the post office is in a resident's front room.

Activity

	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			
Example 3			

Reviewing your analysis

Activity: Analysis checklist

Look at the analysis checklist on the right. If any of these items are missing or incomplete in your analysis section you will need to change them. Go down the list and add yes, no or not sure, for each one.

It is important to get the length of your analysis right – approximately 500 to 600 words should be enough. This may be 2 to 4 pages, including maps, diagrams, background information, etc.

You may find that your aims, questions or hypotheses give you a framework to review the analysis.

Now check that your analysis also:

1. Has a logical flow, structure and sequence.
2. Is divided into clear paragraphs which draw in the reader and make it easy to understand.
3. Uses a clear and concise writing style (avoids rambling and repeating ideas or data).
4. Clearly defines any concepts and special terminology.

Lastly, look at the top range of the mark scheme on page 62. Can you award yourself a top range mark for this part of the work? If not, look to see how you can improve it at this stage. Remember that this work is completed under high level of control.

Tip

The best analyses include a mixture of:

- Correct use of simple statistics e.g. modes and means to help analyse data.
- Annotated photographs and maps to show patterns and explain landscape features.
- Information linked to trends and patterns.
- Ideas which link together the geography, either in words or diagrams.

Analysis checklist

	Yes ✓ *or* **No ✗** *or* **Not sure?**
Have you referred to and described what each figure and graph is showing?	
Have you tried to gives reasons or explain what the data has shown?	
Have you supported your ideas with your data?	
Have you used different techniques to analyse the data?	
Does it read well and is it interesting? Have you checked the grammar and spelling?	
Does it have an appropriate number of words and pages?	

Reviewing your conclusions

Activity: Conclusions checklist

Look at the conclusions checklist on the right. If any of these items are missing or incomplete in your conclusions section you will need to change them. Go down the list and add yes, no or not sure, for each one.

It is important to get the length of your conclusions right – approximately 250 to 500 words should be enough. This may be 1 page or so, possibly including maps, diagrams, models, etc.

Your original aims, questions or hypotheses should give you a framework to review your conclusions (see page 74).

Now check that your conclusions also:

1. Have a logical flow, structure and sequence.
2. Are divided into clear paragraphs which draw in the reader and make it easy to understand.
3. Use a clear and concise writing style (avoid rambling and repeating ideas or data).
4. Clearly define any concepts and special terminology.

Lastly, look at the top range of the mark scheme on page 62. Can you award yourself a top range mark for this part of the work? If not, look to see how you can improve it at this stage. Remember that this work is completed under high level of control.

Tip

The best conclusions:

- Include thoughtful comments linked back to the original task statement.
- Return to the original aims, questions or hypotheses.
- Briefly draw together all the ideas of the analysis section.
- May suggest a possible future for the area studied, based on your understanding. This might be a new management plan, or a map of your own suggestions for solutions to a problem.

Conclusions checklist

	Yes ✓ *or* **No ✗** *or* **Not sure?**
Have you included the most important findings?	
Have you included links back to the original geographical background (theory, ideas, relevance, etc.)?	
Have you linked back to the original task set by Edexcel?	
Have you referred to the wider geographical context?	
Does it read well and is it interesting? Have you checked the grammar and spelling?	
Does it have an appropriate number of words and pages?	

Marks: 9 (18% of total marks)
Time: about 2 hours
Level of control: high

6 Evaluation

Understanding the mark scheme

At last – the final section of the controlled assessment. This is where you need to think about what you have done and how you did it. In particular, you need to consider how your results relate to the original task statement.

As you carry out your Evaluation you will probably come across plenty of 'finishing jobs' to be done (see pages 86–95).

This is what the mark scheme says about a limited and very basic/simple piece of work for an Evaluation:

Mark range	Descriptor
0	There is no evaluation.
1–3	There is limited evaluation of the investigation: either all aspects of the investigation have been evaluated in limited detail or some aspects of the investigation have been evaluated in more detail.

This, however, is what the mark scheme says about a higher level, good (or very good) piece of work for an Evaluation:

Mark range	Descriptor
7–9	There is detailed evaluation of the investigation, which reflects on the limitations of the evidence collected.

So to achieve the highest marks in the Evaluation section you need to:

- Include a review and evaluation of your whole fieldwork process, i.e. every stage. This may include reference to secondary data and other information.
- Identify any problems that you found with the Methods of collecting or Methods of presenting data sections.
- Comment on the accuracy of the results and the **reliability** of your conclusions – how sure are you that they can be trusted?
- Include a brief discussion of how you could improve the overall process if you repeated the work.

You should download and read this section of the mark scheme from the Edexcel website (www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx). Download the whole mark scheme, read it and keep a printout of it with this workbook.

Activity

Read these two examples of parts of students' evaluations, and then mark them using the mark scheme. For each one, give it an estimated mark scheme range and then try to give it a mark. Write down your reasons for that mark, using words and phrases from the mark scheme to help you, and say how you could improve the extract.

Example 1 – Extract from an evaluation

The work I did on rivers went really very well, although the weather meant that some of my field sketches were difficult to do and the paper got wet. I think we worked well as a group, and I got the data I needed to do my controlled assessment. The flow meter that I used for my speed readings was very accurate and worked well. The ruler was good at measuring the length of the pebbles, although there was some unfairness when it came to selecting stones from the river. We may have favoured the larger rocks!

I don't think we could make any improvements, except it would be nicer if the sun was shining.

Example 2 – Extract from an evaluation

Problems and limitations can be grouped into a number of categories:

- Problems with some of the data collection techniques. This includes approaches to sampling, e.g. questionnaires and the biased nature of the questions themselves.
- Sketch maps and photographs were subjective and just snapshots of the day.

Although some results were unusual the majority of the results were as expected and followed a pattern, even if they didn't fit with other pieces of data. Therefore the results are mostly reliable, with some exceptions.

There are other pieces of data that could have been collected that would have taken the work further.

1. More questions on the questionnaire such as 'Did you use any of the recycling facilities on your visit today' would give the researchers a more in depth analysis
2. There could also have been erosion transects and trampling surveys taken at other locations.

	Estimated mark scheme range and mark	Reason for mark – evidence	How to improve extract
Example 1			
Example 2			

What is an Evaluation?

An Evaluation is your chance to reflect on what you have done – what went well and what didn't go so well. There are two types of Evaluation:

- Reflection on the data-collection techniques.
- Reflection on the design methods, e.g. sampling.

Evaluations normally finish with a brief section on how you might change things if you did it all again.

Many pieces of fieldwork and research have limitations and errors, which can affect their findings. Your Evaluation should comment on the reliability of your results – how sure are you that they are 'true' and have not just happened by accident? This important part of your Evaluation is covered on page 84.

The first part of the Evaluation process is to link back your findings to the original task statement set by Edexcel (see the Activity below). You need to say whether your results can be used to support the statement or whether, in fact, they go against it. It doesn't matter if your results do not support the statement, as long as you suggest sensible reasons why.

You might want to use words such as 'partial', 'tentative' or 'incomplete' to describe your findings. These are particularly useful when you are not really sure about your findings because, for instance, you haven't got enough data. Would you get the same conclusions if you repeated the study at a different time?

The example below provides a useful structure to use:

Activity: Linking your findings to the original task statement

Fill in the three parts of the table on the opposite page.

- Write down the original Edexcel task statement that you were given.
- Identify which parts of your data and ideas support the statement and which parts do not.
- Write a final sentence to summarise how, overall, your findings are in favour of (or against) the original statement.

Linking your findings to the original task statement

Edexcel's original task statement

My data and ideas which support the statement	My data and ideas which go against the statement

After reviewing all my data and ideas, I would say that, overall,...

Evaluating the limitations of your evidence and suggesting possible improvements

This is an opportunity for you to take an overview of the whole controlled assessment process. Your Evaluation should include details of how the accuracy of your evidence might have been limited by any problems or practical restrictions in your fieldwork. These could relate to several different aspects, such as:

Equipment	Equipment that broke or didn't work, e.g. the batteries ran out, the questionnaire was faulty.
Sampling	Not enough data because the sample size turned out to be too small, wrong sampling method chosen, there were gaps in the data, etc.
People or operators	Methods too difficult for some people, e.g. plant identification, inaccurate readings of equipment.

But don't make your limitations read like a list of excuses:

'It was raining so our recording sheets got wet – this made it difficult to write down the results.'

'The other members of the group were messing around and didn't try to record the data properly.'

You should also use the Evaluation section as a time to reflect on the strengths of what you have done, such as:

- What you found most interesting, useful or rewarding in doing the work. You might have found out something locally that was of particular interest to you personally.
- What was the particular highlight of the work? For example, did a particular method or technique work especially well? This could include reference to an individual piece of equipment or perhaps an approach that seemed to be good.
- The evaluation should also reflect on all aspects of the work undertaken, including the Purpose, Methods of collecting/presenting data and Analysis, as well as the Methods of collecting/presenting data.

The Evaluation section should also include a brief description of possible improvements and ideas for extending the study:

- Improvements – what you would do to improve the process if you did the work again, e.g. change the equipment, repeat the sampling, collect more data, do a comparison at different times of the year.
- Extending the study – how your study could usefully be taken further, e.g. into different locations (for comparison), with additional data.

Activity: Evaluating the limitations of your evidence and suggesting possible improvements

Complete the table on the opposite page. Try to put at least two ideas under each heading. You can use a format like this for your actual controlled assessment report that you hand in.

Evaluating the limitations of your evidence and suggesting possible improvements

	Limitations of your evidence	Suggestions for improvement
Purpose of investigation		
Methods of collecting data		
Methods of presenting data		
Analysis and conclusions		

7 Final checks and structuring your report

The structure of your report should follow a particular order, based on your route through the enquiry. It will probably look something like this:

Cover page (1 page)
Your title (including the Edexcel task), your name, details of your school, candidate number. May include a photograph to help set the scene.

Contents page (1 page)
A list of all the sections in your report, in the correct order, with page numbers. (Optional)

Purpose of investigation (1–2 pages)
A clear, focused statement of the aims, purpose and location of your study, including appropriate maps.

Methods of collecting data (about 1 landscape page)
A description (and explanation) of the methods you used to collect and record your data.

Methods of presenting data (about 2 pages)
Your data presented in a range of appropriate ways.

Analysis of results (2–3 pages)
Your analysis of the data, using a range of appropriate methods and explaining any links that you made.

Conclusions (1 or 2 pages)
A summary of the main points of your analysis, leading to clear, relevant and focused conclusions.

Evaluation (about 1 page)
Your review of the entire process, commenting on the limitations of the evidence, a link to the original task, and possible improvements.

References (about a third to half of a page)
A list of your sources of information.

Appendix (if you need to have one)
Any additional items that you feel should be included, e.g. any examples of record sheets. (Optional) Make sure you refer to any additional items in the appropriate section of your report, e.g. examples of record sheets in the 'Methods of data collection' section.

Word count
The maximum number of words is 2250. There is a penalty if you go over-length. You cannot achieve maximum marks for 'Planning and organisation' if you are not within the limit.

Writing up your report: the options

Not all of your report has to be 'written up' in the traditional sense – you can use a variety of formats. Depending on your school circumstances, you may be able to choose the method of presentation that suits your preferred way of working and your particular skills best. A few points to think about are:

- Some of the work must be written text so that you can be given the marks for quality of written communication.
- Some formats work better in some sections than in others; for instance the 'methods' can suit a range of approaches (see Activity below).
- Your access to ICT – and your own ICT skills – will affect what you can achieve. Make the best use of what you have.
- Your final work should be about 2000 words long or the equivalent. 2200 is the maximum number of words permitted, including all diagrams and tables.
- You must always stick to the controlled assessment rules – so using free online services such as document storage (e.g. Google Docs) would probably only be suitable for limited control.

How to submit digital work

If you do use some digital formats then you should save them on a separate CD/DVD so that your teacher can store them. Also, if you have created your own annotated GIS map, record the web address for it so that the work can be marked. It is sensible to produce a word-processed list of any pieces of your own online work.

Activity: Which ICT options will you use?

On the right is a list of some of the ICT formats and programs that you might want to use when preparing your report. Think about your own study and then tick the ones you might use.

Which ICT options will you use?

ICT option	Use?
Online annotation of images using MP3, for example http://voicethread.com/, e.g. for your methods section	
Concept map/Wordle, for example www.wordle.net/, e.g. as a summary of your findings	
Presentation/PowerPoint, e.g. for your methods section	
'Pixton' cartoon from http://pixton.com/uk, e.g. for your methods section	
Online poster, for example www.glogster.com/, e.g. for your introduction	
MP3/Podcast, e.g. for describing your site locations	
Web pages/Wikis, e.g. for setting the context and your introduction	
Web-based GIS/Google Maps, e.g. using 'placemarks' to evaluate methods	
Video/DVD and transcript, e.g. for your methods section	

The quality of your writing

The 'quality of written communication' in your report will be assessed and will make a difference to your marks. Poor quality communication will stop you being able to get the higher level marks for report production (see page 50). You are entirely in control of what you write and should think carefully about how you do it. In particular:

1. The information you present must be in a suitable form, so your report should be written in a formal 'report' style.
2. The information should be relevant and organised clearly and sensibly, using paragraphs arranged in a logical order.
3. Ideally you should stick to the 'one idea per paragraph' rule – see the Activity below.
4. Your spelling, punctuation and grammar should be accurate, so that your meaning is clear. Use a dictionary to check your spelling.
5. Use specialist terminology when it is appropriate and express geographical ideas clearly.

Activity: Improving your writing

- Look back at what you have already written to check that you are following the 'one idea per paragraph' rule. If possible, rewrite any longer paragraphs as shorter ones so that they are clearer. Separate out the different strands of what you are trying to say to make your meaning clear to the reader. This is a good process to do when you are redrafting, e.g. your analysis and conclusions. (Obviously the use of a computer makes this process much easier.)
- In the space on the right, list the geographical terms and other words that you often get wrong.

Activity: Improving poor writing

- The sentences and parts of sentences on the opposite page are too wordy and awkward. Rewrite them so that they are clearer and shorter.
- On the opposite page is an extract from some background information about an investigation into footpath erosion in the Lake District. Annotate the extract, suggesting improvements that could be made to (1) the structure, (2) the use of paragraphs, (3) the technical terms, (4) the order of the material, (5) the spelling, and (6) the grammar.

Improving your writing

The words I often get wrong are...

SPaG

You will be assessed on the quality of your written communication in other parts of the exam, so getting your terminology right here is good practice as well as necessary to maximise your marks for 'Planning and organisation'.

i) Ensure your text is legible and that spelling, punctuation and grammar are accurate so that your meaning is clear.

ii) Select and use a form and style of writing appropriate to your purpose and to subject matter.

iii) Organise your information clearly and coherently, using specialist vocabulary when appropriate.

Improving poor writing

Original 'wordy' writing	Re-written version
Moving to another phase of the project we found . . .	
It is sort of understood that it could be to do with . . .	
One famous physical feature of the landscape was the narrow valleys.	
Pedestrian flows are increasingly important in retail shop distribution and function.	
My results normally showed that, in many cases, we found tourists were overcharged.	

Background information and the details of the location for study

The Lake district national Park offers many jobs in tourism. It is home to 42,000 people, which 37.23% work in shopping and transport and 29.756 that work in service. Cat Bells is located in the Lake District National Park, which is visited by 12 million people a year and is around 2292km^{2}In size, making this a large and popular rural area. The National Trust and Lake District National Park Authority manage the cat bells area, it is around 3km^2 and is located at 5km to the South West of keswick. There are many routes through Cat Bells and this makes it easy for people of all ages, including oldies and young children. Two of the more popular routes are the Allerdale Ramble and Cumbria Way. The hills slopes are very steep, as shown by many maps as the contour lines are tightly packed together. The altitude of cat Bells ranges from 75 to its 451 summit. The area is easy to access due to many main road links such as the a66 running close to, and a ferry port also close by. The Lake District National Park is made up of mountains, moors, woodlands, lakes and etc. it is the largest of the eleven parks spread across England and wales These can be seen from the summit, you can see what surrounds Cat bells with a 360° view. The surroundings include the lake, called derwent Water, many woodland areas and parks such as Brandelhow Park and manesty Park.

Top Tips

Good geographical writing uses specialist and often technical language. You should be keeping a list of specialist words and defining them as you complete this workbook. There is no need to define the technical terms that we use every day, such as 'river', but you should define more specialist terms, such as 'river discharge'.

Producing a list of references

You should include a bibliography at the end of your report. A bibliography is a list of all the sources of information that you have used. It is arranged in alphabetical order, by author surname or organisation.

The best bibliographies include a range of types of sources, including:

- Books (specialist texts relating to various aspects of geography).
- Articles (e.g. from specialist magazines such as *WideWorld*, *National Geographic*, *The Economist*, *New Scientist*).
- Newspapers (remember most are available online with free access – www.thebigproject.co.uk/news/ is a good website to access them from).
- Companies' and organisations' websites (specialist reports or marketing information).
- Internet blogs and forums (information on what people think about particular issues – some are local, others are associated with certain newspapers and TV programmes).
- Websites used for maps and digital images.
- Films, videos and DVDs (and transcripts of programmes).
- Non-published correspondence (e.g. letters and emails).

Activity: Draft bibliography

On the page opposite there is space for you to write a draft of your bibliography, using some of the information that you recorded earlier in this booklet, together with the papers that you have collected as part of your research process.

The Harvard system

There are many methods of referencing, but the easiest and most widely used is the Harvard system. Where you have quoted someone else's work in your report you just put, in brackets, the author's name and the year of publication. Example: (Holmes, 2001).

In your bibliography, at the end of your report, you must put all the details needed by the reader to find the source if they want to. These details are laid out in a standard way, which varies for books, articles and Internet sites, as follows:

Books: Author's name; year of publication in brackets; title in italics; place of publication; publisher.
Example: Flint, D. et al (2009) *Edexcel GCSE Geography B Evolving Planet,* Oswestry, Pearson Education.

Articles in magazines or newspapers: Author's name; year of publication in brackets; title of article in quotation marks; name of magazine/ newspaper in italics; volume and issue number/date; page numbers. Example: Holmes, D. (2009) 'Questionnaires, interviews and focus groups', *Geography Review*, Vol. 22, No. 3, pp. 39–42.

Internet sites: Author's or organisation's name; year in brackets (or put n.d. if no date given); title; URL; date it was accessed. Example: Ordnance Survey (2009) *Digital Mapping and GIS in Schools*, www.ordnancesurvey.co.uk/oswebsite/education/digitaldata/schools.html, accessed 5 September 2009.

Remember, the key to writing a bibliography is keeping the format consistent – using a standard sequence of commas, full stops, italics, etc. If you are writing by hand, underline the words that are supposed to be in italics.

Top Tips

You can find out much more about referencing by looking in books and magazines to see how it is done. Alternatively, have a look on the Internet for various examples, especially in scientific papers and academic journals.

Draft bibliography – books and magazines

	Type (book or magazine)	Author/organisation/ name of magazine	Year (if book) Volume, issue number and date (if magazine)	Title Page numbers (if magazine)	Place of publication (if book)	Publisher (if book)
1						
2						
3						
4						

Draft bibliography – websites

	URL	Author/organisation	Year	Title (if applicable)	Date accessed
1					
2					
3					
4					

Creating the Contents list

One of your final tasks is to produce a Contents list, showing what page each new section of your report starts on. Sorting out the Contents list is important because:

- It forces you to be well organised and to check that your report has all its sections (see page 86).
- It can be used as a last chance to change the order of the sections (and remember that marks are given for the correct sequencing).
- It makes the report look more professional.
- It makes it easier to mark because everything is in clear sections.

Activity: Improving a Contents list

Below is an example of a Contents list from a student's controlled assessment. It is the page after the cover sheet. In the space on the right, write down the advice that you would give to help improve the overall quality of this page.

Contents

Top Tips

Numbering your pages should be the last job you do (this will be under high level of control). Then you will be able to complete your Contents list.

Activity: Your Contents list

Compile your own draft Contents list using the template on the opposite page. Tick the right-hand column as you complete each section. Then copy the list for your final report.

Your Contents list

My advice to you is ...

Your Contents list

Page number	Section of your report	Completed?

The final checks on your report production

This final part of the workbook provides a few last tips and one final checklist – and then you have finished.

Presentation matters

People are influenced by the quality of presentation, so think about the following points:

- A neatly presented, handwritten or word-processed report is going to create a good impression even before its geographical quality is taken into account.
- Layout is important. It should look like a formal report but do not crowd your work with too much dense text and writing. Try to break it up with relevant maps, diagrams, pictures, etc.
- Make sure all the maps and diagrams are labelled (e.g. Figure 1.2) and in the correct place. Ideally, they should be close to where they are mentioned in the text – it is annoying for the reader to have to flip backwards or forwards to find the relevant illustration.

Proofreading is also important to make sure there are no mistakes in your report and that it is ready for the final hand-in. As you were drafting it, you should have been reading everything through and marking any factual errors or inconsistencies, or mistakes in the spelling, grammar or punctuation. It's always a good idea to get a friend to read though the work that you have completed under limited control – because they may see little mistakes that you have missed. But, remember, your friend should not offer any additional help and support, other than acting as a 'checker'.

Activity: Your final checklist

Use the checklist on the opposite page as a final opportunity to pick up errors and inconsistencies.

When you have carried out all the final checks, you can be confident that the work is the best that you could have done. It is time to submit your finished report – well done and good luck.

Your final checklist

Section no.	Description	Details of any errors, including page number	Corrections made (date)	Final 'sign-off check' (date)
1				
2				
3				
4				
5				
6				
7				

Work complete (date) _____

Aim: A statement of what you hope to achieve.
Analysis: The stage in the report where you describe what you have found, provide explanations, make linkages, etc.
Annotation: The process of adding detailed notes and explanations to photographs and images.
Conclusion: The summary of what you have found – the final finishing-off section.
Correlation: The (statistical) degree of linkage between two sets of data.
Data presentation: Showing the reader your data in an easy-to-understand format, i.e. maps, graphs, sketches, etc.
Distribution: The (spatial) pattern of a particular characteristic, feature or people within an environment.
(Geographical) Enquiry: The process of asking a geographical question, completing the fieldwork and writing-up which come together to form the report.
Evaluation: A reflective process, saying what was good / bad, commenting on the reliability of results.
Fieldwork: Going outside and collecting data about people, places and environments.
GIS: Geographical Information System – a modern way of representing points and places on a digital map.
High Level Control: Work which is directly supervised by your teacher; happens towards the end of the controlled assessment activity.
Hypothesis: A testable idea in the form of a statement (not a question).
Limited Level Control: Work which is not supervised so can be working in groups; happens at the start of the controlled assessment activity.
ICT: Using computers and technology in one form or another as part of the controlled assessment.
Interview: Longer open-ended style of questioning someone; really like a conversation.
Introduction: The start of the report, setting-up what you intend to do, giving background information.
Land use: A classification and then recording of the type, number and distribution of features on the ground.
Literacy: Being able to communicate well in the written form using structured sentences and incorporating geographical terminology.
Mark scheme: The published criteria which link to different sections of the report so that your teacher can award different marks.
Median: Divides the data into two halves; the median is the middle value (which may be different to the mean).
Methods: A description of the fieldwork techniques used to collect data to support your enquiry.
Mode: The most frequently occurring number in a series of numbers.
Primary data: Data that you have collected yourself, first hand – it may come from the Internet as well.
Qualitative data: Information which is subjective or does not have any number such as a photograph or sketch map.
Quality of life: A broad idea of how pleasant or agreeable an area might be in terms of housing, schools, environment, etc.
Quantitative data: Data which contains numbers and figures such as the number of pedestrians.
Question: A geographical question that might be asked at the beginning of an enquiry.
Questionnaire: Usually an interview where there are lots of questions and factual, numbered responses.
Range: The difference between the highest and lowest values in a set of data.
References: Details of any published work / research you have used as part of your work.
Reliability: How sure you are that your results are actually really telling the 'truth', i.e. they are accurate and could be repeated.
Report: The work that you will hand in for the controlled assessment – it will be marked by your teacher.
Sampling: A way of getting data for your study without collecting loads of information.
Secondary data: Data that you got from someone else that is in a written-up form.
Task: A broad title set by Edexcel each year that gives the context for the controlled assessment.
Theory: A geographical idea or concept that may underpin the reason for your aims / questions.
Transect: A line along which you carry out sampling, such as a road or river.