AS3: Fieldwork Skills and Techniques in Geography

Geographical Association

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Your Specification

3.3 Unit AS 3: Fieldwork Skills and Techniques in Geography

In this unit, students become actively involved in collecting geographical data first-hand through fieldwork. Students identify geographical questions and issues, select appropriate sources and methods and establish effective approaches to inquiry in their geographical studies.

There are opportunities for students to use a range of technologies, including GIS.

Assessment for this unit is a written examination that includes both short and resource-based questions. Students must provide and submit a word-processed summary statement and table containing primary data. For more details, see Section 6.

The start of this section has a detailed list of the skills and techniques that students need to know.

Content	Learning Outcomes
Fieldwork skills and techniques	Students should be able to: (i) identify geographical questions and issues, select appropriate sources and methods, and establish effective approaches to inquiry in their geographical studies; (ii) show awareness of fieldwork safety both in preparation and in the field by: – completing investigative work safely in the field; – showing awareness of hazards and risks and demonstrating how their planning involves discussing strategies to avoid accident or injury while collecting data; and – describing contingencies they have made for dealing with accidents while in the field; (iii) choose and evaluate appropriate sampling techniques (pragmatic, random, systematic, stratified, point, line or quadrat) for an investigation or survey and justify their choice; and (iv) use a range of techniques to identify, select and collect quantitative and qualitative evidence from primary and secondary sources.

Content	Learning Outcomes
Fieldwork skills and techniques (cont.)	Students should be able to: (v) describe and evaluate the data collection methods selected for geographical investigation; (vi) organise, record and present evidence in cartographic, diagrammatic and graphical form, making use of ICT and GIS where appropriate; (vii) choose and apply appropriate statistical techniques to their own data and/or data presented to them (formulae and statistical tables and graphs will be provided); (viii) describe, analyse, evaluate and interpret evidence and draw conclusions; (ix) evaluate their methods and approaches to enquiry and the limitations of the evidence collected and conclusions drawn;
Topic for investigation	(i) choose an issue, hypothesis or question for investigation related to or arising from study as part of Units 1 or 2; (ii) identify appropriate sources and methods for collecting data individually, in small groups or as a class, from both primary and secondary sources (for example databases, maps, texts or census data – please note that census data is acceptable as primary or secondary data);
The written report and table of data	(i) provide and submit a word-processed summary statement of approximately 100 words, which must include: – a brief outline of the location of the study; and – a summary of its aims or hypotheses; and (ii) provide a table or spreadsheet containing primary data along with this statement (please note that the table must allow for some statistical and graphical techniques to be applied to it, as questions may be set that require this information to be used).

Your Specification

Skills and techniques

Teachers should incorporate the skills and techniques listed below into the teaching of the subject content. They should encourage students to use the internet and to use ICT for collecting, sorting, recording and presenting geographical information.

Through their geographical studies, students need to become familiar with the following skills and techniques:

Data collection

Students must develop their data collection skills. At AS level students should:

- observe and collect primary data at first-hand from physical and/or human environments using equipment, surveys or questionnaires; and
- carry out sampling methods such as:
  - random;
  - systematic;
  - stratified;
  - pragmatic; and
  - point, line or quadrat.

At AS and A2 levels students should:

- analyse and interpret geographical information from the following secondary sources:
  - public maps, including Ordnance Survey maps at a range of scales;
  - photographs;
  - satellite images;
  - surface pressure or synoptic charts; and
  - remotely sensed images and data, both quantitative and qualitative.

Your Specification

Data processing

Students must also develop their data processing skills. They must be aware of Geographical Information Systems (GIS) to assist geographical understanding. At AS and A2 levels, students must develop the ability to:

- construct, analyse and interpret dot, flow line, choropleth and isoline maps;
- draw annotated sketch maps;
- construct, analyse and interpret scatter graphs, line graphs, bar graphs, pie charts, proportional graphs and triangular graphs;
- use methods of statistical analysis including mean, median, mode and range, Spearman's rank correlation, nearest neighbour analysis and, for A2 level only, chi-squared and location quotient; and
- improve their investigative skills by collecting and processing data from relevant secondary and/or primary geographical sources (for A2 only).

Please note that all mapping, drawing and graphical techniques should follow geographical conventions with regard to title, key, scale, frame and direction arrow.

Fieldwork Skills and Techniques in Geography Examination

Question 1 30 marks

- Fieldwork Report and Table
- Fieldwork-related Questions

Question 2 30 marks

- Skills and Techniques using Secondary Data Sources
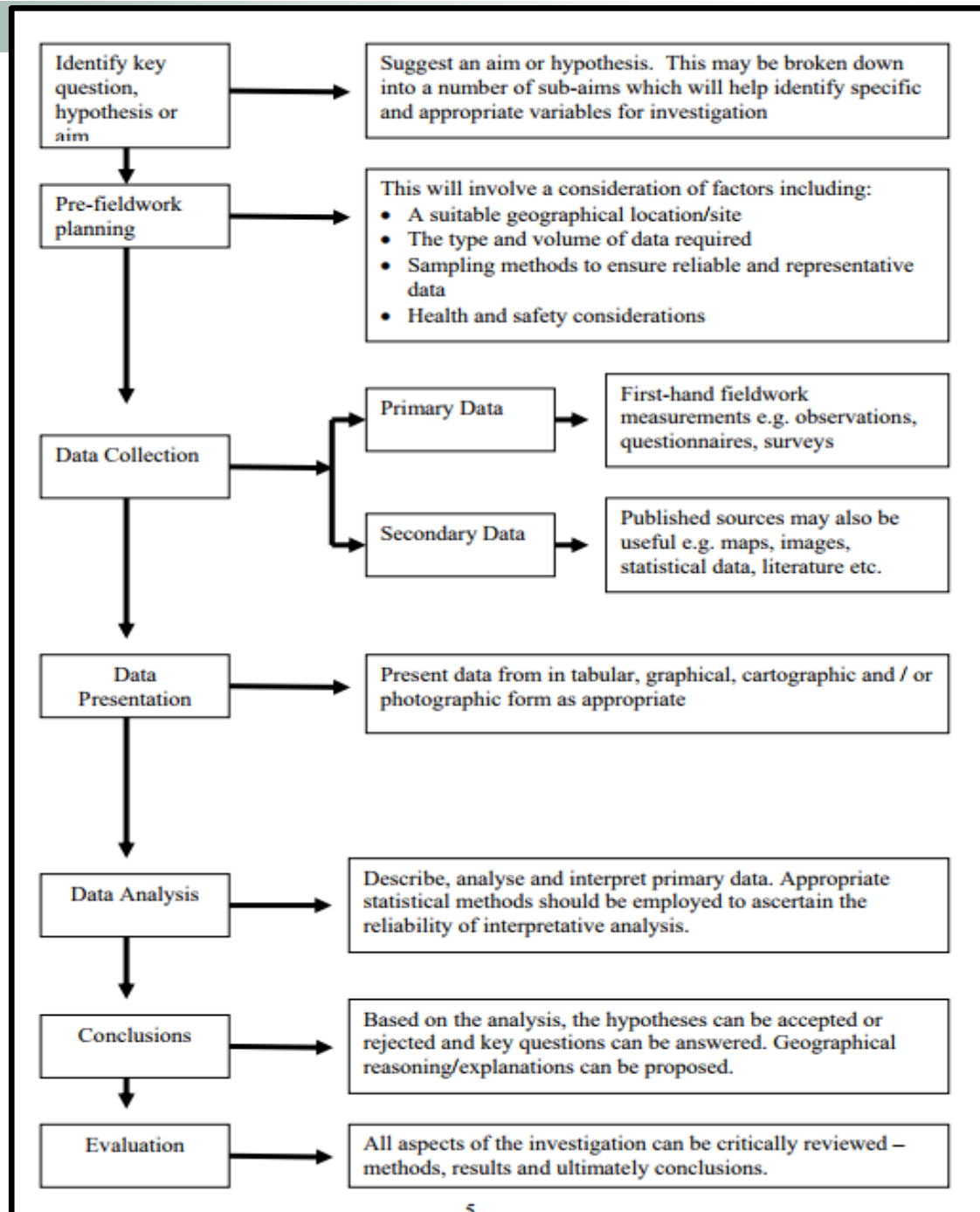
Question 1:
Fieldwork Skills

Topic for Investigation

Your investigation must be based on sound geographical theory which relates to some part of the specification content of AS1 or AS2.

Popular fieldwork investigations include:
- River studies
- Sand dune studies

You may be asked questions relating to any stage of the **Fieldwork Process**, from Planning to Evaluation.

| Identify key question, hypothesis or aim | → | Suggest an aim or hypothesis. This may be broken down into a number of sub-aims which will help identify specific and appropriate variables for investigation |

| Pre-fieldwork planning | → | This will involve a consideration of factors including:
• A suitable geographical location/site
• The type and volume of data required
• Sampling methods to ensure reliable and representative data
• Health and safety considerations |

Data Collection →

| Primary Data | → | First-hand fieldwork measurements e.g. observations, questionnaires, surveys |
| Secondary Data | → | Published sources may also be useful e.g. maps, images, statistical data, literature etc. |

| Data Presentation | → | Present data from in tabular, graphical, cartographic and / or photographic form as appropriate |

| Data Analysis | → | Describe, analyse and interpret primary data. Appropriate statistical methods should be employed to ascertain the reliability of interpretative analysis. |

| Conclusions | → | Based on the analysis, the hypotheses can be accepted or rejected and key questions can be answered. Geographical reasoning/explanations can be proposed. |

| Evaluation | → | All aspects of the investigation can be critically reviewed – methods, results and ultimately conclusions. |

5

But you will have some help in the examination…

A Fieldwork report consisting of:

Summary Statement

Table of Data

Summary Statement

- No marks awarded
- Must be completed using the booklets issued by CCEA

- It must include:
  - ☐ the **title**;
  - ☐ a statement of the **aim** and **hypotheses** to be tested; and
  - ☐ brief details of the **location of the study.**

Summary Statement

Must **NOT** include:

- Theoretical Background
- Planning
- Data Collection
- Analysis/Interpretation
- Graph Work
- Statistical Calculations
- Conclusions
- Evaluation

Table of Data

- primary and secondary data essential to investigate the aim of the study;

- data collected for all variables relevant to the proposed aim/hypotheses of the study;

- quantitative data (numerical scores) essential to allow for graphical presentation and statistical analysis;

- normal conventions, including a title with all variables clearly stated along with precise units of measurement; and

- the inclusion of raw data only (candidates should not include averages or other statistical calculations).

Procedure

- Complete the cover sheet of the booklet.
- Submit to Examinations Officer at least 5 days before the AS3 exam.
- **Tick the box** on the cover of your examination to indicate you have included your Summary Statement and Table of Data Booklet.
- At the end of the exam, place your booklet **behind** your exam paper.

Question 1

- **30 marks** available
- You should spend **30 minutes** on this section
- **Questions** relate to all aspects of fieldwork
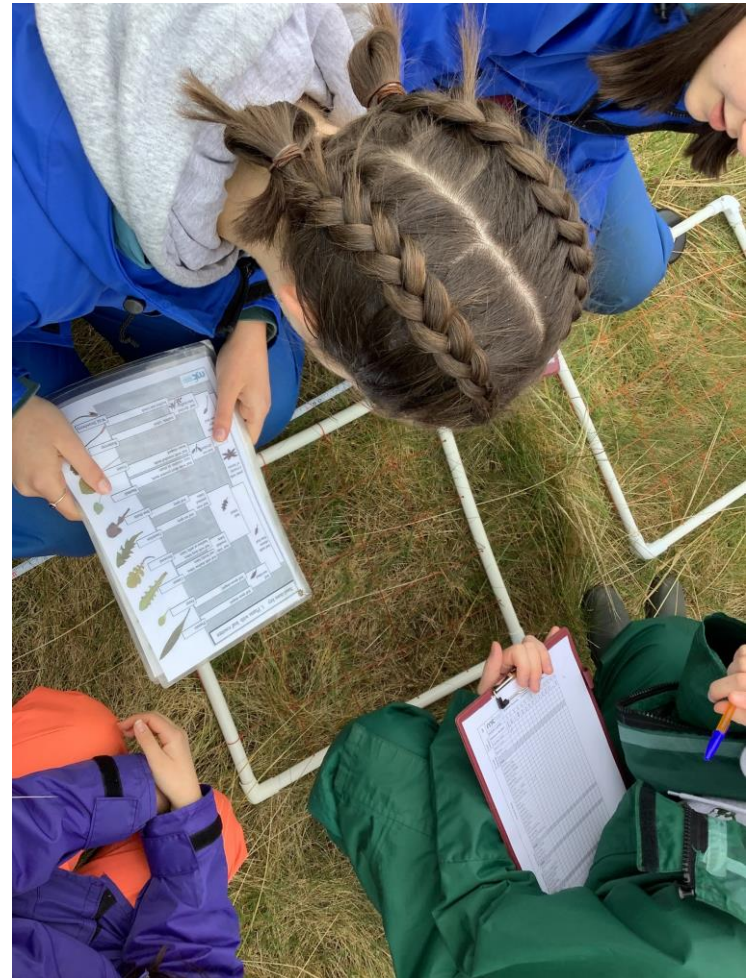
Fieldwork Planning

↓

Data Collection

↓

Graphical Representation & Analysis

↓

Statistical Analysis & Interpretation

↓

Data Interpretation (Explanation)

↓

Geographical Conclusion

↓

Evaluation

↓

Possible Extension of Fieldwork

The Fieldwork Process

Planning

- **Location** – Justification of chosen study location
- **Health and Safety**
    - Identification of **specific** hazards
    - Risk minimisation strategies and contingency plans
- **Data Sources**
    - Consideration of primary sources
    - Consideration of secondary sources
- **Sampling**
    - Consideration and justification of sampling method and sample size
- **Pilot Testing**

Question from AS3 2018

Study **Resource 1A** which shows some important factors for consideration in fieldwork planning. Select **two** factors from Resource 1A and discuss fully how they contributed to **your fieldwork** planning. [4]+[4]

Resource 1A
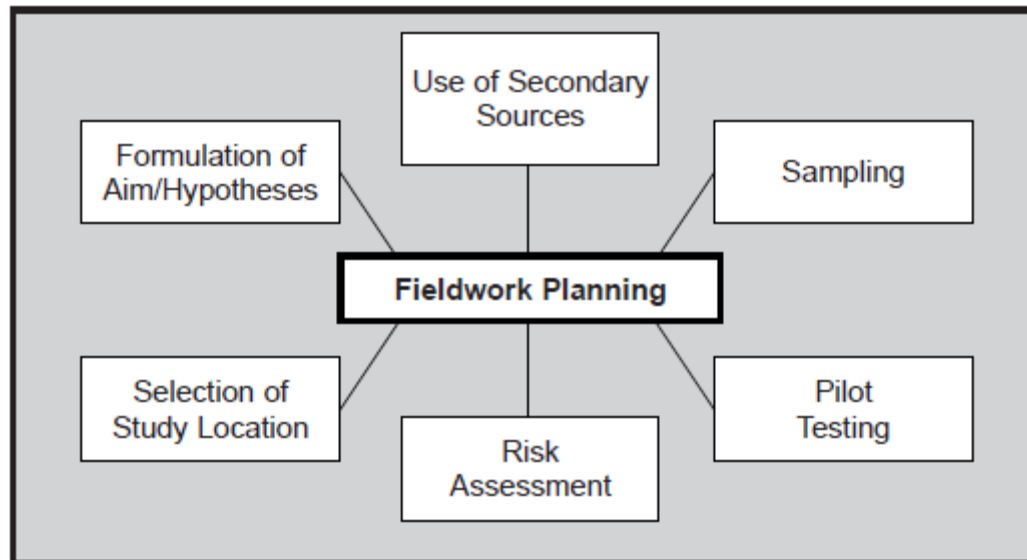
Source: Principal Examiner

Mark Scheme

(a) Answers will vary depending on the fieldwork undertaken and the planning factor selected.

Award [3]–[4] for an answer which fully and coherently addresses the contribution of the selected factor to fieldwork planning and which makes convincing and explicit links to the individual fieldwork.

Award [1]–[2] for a more simplistic response which may fail to develop the contribution of the selected factor to fieldwork planning. Fieldwork links may be less convincing.
(2 × [4])

Maximum [2] if not referenced to fieldwork planning.   [8]

Candidate 1

Pilot Testing

Prior to carrying out the investigation we used pilot testing on our equipment that was going to be used. From this pilot testing we decided not to use ranging poles and a float to measure velocity, but instead use a hydroprop flowmeter to make our velocity readings more accurate. We divided the channel length by 4 to achieve 3 equidistant intervals then at each interval we held the hydroprop flowmeter at 2/3 depth and recorded the time taken for the impellar to reach the end of the spindle. We then added up these three velocity readings and divided them by three to give us an average and make our results more reliable.

Candidate 2

Use of Secondary Sources
In order to select the location of my investigation the Umbra Dunes I used a 1:50000 map of Coleraine Sheet 4. In so doing I was able to see the Umbra Dunes were an Area of Special Scientific Interest and a Special Area of Conservation so there was no risk of studying a plagioclimax as human interference was restricted.

Question from AS3 2019

Selecting a suitable geographical location for investigation is an important part of fieldwork planning. With reference to **your** fieldwork planning:

- Describe how your chosen location was selected; and
- Outline **one** reason why it was considered a suitable location for investigating the aim of **your** fieldwork.

How the location was selected
This may have been completed through pre-site visits, research or secondary sources, discussion, mapwork, prior teacher knowledge, etc. Award [1] for a basic response. Award [2] for a detailed response with clear and conspicuous references to the candidate's own fieldwork investigation.

Explanation why the location was suitable
The selection of a suitable study location is essential if the aim of the study is to be explored reliably or meaningfully. Award [1] for a basic response. Award [2] for a detailed response with clear and conspicuous references to the candidate's own fieldwork.
(2 × [2]) [4]

Candidate 1

We selected the Umbra Sand Dunes as it is a Special Area of Conservation used for geographical study. These sand dunes were suitable for investigating plant succession within the psammosere as vegetation succession could be clearly seen from the shoreline as we moved inland.

Candidate 2

The River Shimna was selected by a secondary source of an OS map of the Mourne Mountains. This was selected as 15 sites were allowed to be chosen at regular intervals. This was by systematic sampling. It is also a river that is clean, unpolluted and untouched by human activities.

Data Collection

Primary Data

- Description of Fieldwork Procedures
- Type and use of equipment
- Laboratory Techniques (if relevant)

Secondary Data

- Selection of specific sources and their role within the investigation

Graphical Presentation

- Selection of appropriate technique (e.g. bar graph, line graph, scatter graph)
- Construction of a relevant graph for [7] marks:
  - **T**itle [1]
  - **C**onventions [2]
  - **A**ccuracy [3]
  - **M**ethod [1]
- Description (analysis) of graph
- Explanation (interpretation) of graph in relation to geographical theory

Graphical Presentation

Feedback from recent Chief Examiner report:

Well-prepared candidates competently demonstrated their graphical presentation skills and full marks were commonly awarded. Occasionally, marks were lost when:

- the title lacked accuracy or precision;
- the dependent and independent variables were confused;
- the units of measurement were omitted from the axes of the graph;
- an inappropriate line graph was plotted when the x-axis variable displayed discrete rather than continuous data;
- the scaling of the x- and y-axis failed to encompass all values;
- graph-work lacked completion or displayed some inaccuracy; and
- the candidate failed to make sufficient use of the space provided.

Statistical Analysis

3 possible analyses:

- Mean, median, mode and range
- Nearest Neighbour Analysis
- Spearman's Rank Correlation Coefficient

You should be able to:

- Justify your chosen technique
- Apply it to data from your data table
- Interpret (explain) the statistical outcome

Spearman's Rank Correlation Coefficient

Station	Distance from source (Km)	Rank	Particle Size (mm)	Rank	d	d²
1	3	10	900	1	9	81
2	6	9	850	2	7	49
3	9	8	800	3	5	25
4	12	7	600	4	3	9
5	15	6	480	5	1	1
6	18	5	170	7	-2	4
7	21	4	150	8	-4	16
8	24	3	130	9	-6	36
9	27	2	180	6	-4	16
10	30	1	100	10	-9	81

$$\Sigma d^2 = 318$$

$$r^s = 1 - \left\{ \frac{6 \Sigma d^2}{n^3 - n} \right\}$$

A 1
C 6
I 2

$$r^s = 1 - \left\{ \frac{6 \times 318}{1,000 - 10} \right\} = \left\{ \frac{1908}{990} \right\}$$

$$r^s = 1 - 1.92727$$

$$r^s = -0.92727 \quad \} \text{ strong negative relationship}$$

I'm 99% certain that this did not occur by chance in accordance to significance graph.

Statistical Analysis

Feedback from recent Chief Examiner report:

Occasionally, candidates lost marks when they:
- simply inserted their memorised $\Sigma d2$ value into the Spearman's Rank formula, instead of completing the necessary steps to illustrate how the value was derived;
- selected two variables which did not relate to a hypothesis stated in the fieldwork report;
- erroneously ranked their data;
- misapplied the formula; and
- failed to provide a conclusive statement on significance.

Centres and candidates must be reminded that all calculations must be shown in the box provided. There is certainly enough space to do so. The ranking of data and completion of calculations, for example, must not take place on the submitted table of data.

Question from AS3 2019

Explain this statistical result, in relation to your aim, with reference to relevant geographical theories or concepts. A summary of statistical significance should **not** be included.

Geographical reasoning is required to support the statistical outcome and the discussion should integrate relevant theoretical concepts or models, as well as specialist terminology. The geographical reasoning provided will depend on the specific aim/hypothesis, the topic or theme investigated and the statistical outcome attained. If statistics are incomplete/not attempted from 1(c)(i), maximum L2 (if variables can be identified from answer). Summaries of statistical significance should not be credited.

Level 3 ([6]–[7])
The answer displays sound geographical reasoning with the effective integration of relevant theoretical concepts and terminology. The explanation provided is relevant to the aim of the study as well as the statistical outcome. Quality of written communication is excellent.

Level 2 ([3]–[5])
A less detailed geographical reasoning is presented with only tenuous integration of theoretical concepts. The inclusion of specialist terminology may be less well developed or more limited. Quality of written communication is good.

Level 1 ([1]–[2])
Explanation may be more simplistic or less complete. Specialist terminology may be very limited or neglected. Answers which only describe the aim/hypothesis will be at this level. Quality of written communication may be poor.   [7]

Candidate's Response

This statistical result shows that with distance downstream increasing that average bedload length decreases. For example at Site 1 (0.5km from source) average bedload was 200mm. Whereas at site 12 (16.5km from source) average bedload was 29mm. There was overall reduction of 171mm. This gave is a Rs result that showed 99% significant. Therefore we could accept the hypothesis. This is due to processes of erosion. Attrition is the load hitting off banks and bed and therefore becoming smaller. Hydraulic action is the sheer force of the water moving and causes the load to get smaller. Also, processes of transportation, traction and saltation will cause them to be smaller. This therefore fulfils our aim to investigate downstream changes and concludes that the load gets smaller.

Evaluation

Evaluation of Fieldwork

- Planning
- Data Collection Procedures
- Health and Safety Strategies
- Time of year
- Time of day

- Sampling Method and Size
- Possible Extensions to your fieldwork

Exam Questions

Study Resource 1A , which outlines some important considerations planned by a student in preparation for fieldwork.

Select one from the list above and discuss its importance and role within **your** fieldwork.
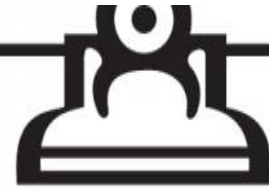
- Travel
- Access Arrangements
- Availability of Assistance
- Safety Equipment
- Suitable Clothing
- Communication
- Navigation Aids
  e.g. compass etc.

Source: Principal Examiner

Question from AS3 2018

With reference to any **one** of the variables displayed on your graph, identify and explain **one** factor which may have influenced the accuracy of the data collected in the field.

(ii) As required by the question, the factor discussed must relate to one variable displayed in the graph.

Award [0] for an answer not worthy of credit.

Level 3 ([4]–[5])
The candidate provides a detailed explanation of how the chosen factor influenced, either positively or negatively, the accuracy of the data collected in the field. There are clear and convincing references to the candidate's own fieldwork. Quality of written communication is excellent.

Level 2 ([2]–[3])
An accurate but less detailed response. While an appropriate factor is identified, the discussion concerning its influence on the accuracy of the data collected may be restricted in depth and detail. References to the candidate's fieldwork may be less convincing. Quality of written communication is good.

Level 1 ([1])
A simplistic response. The discussion concerning the influence of the factor may be basic, tenuous and/or lacking reference to the candidate's own fieldwork investigation. Quality of written communication may be basic.

[5]

Candidate 1

A factor which may have influenced the accuracy of our data is our method of data collection. At each sampling site, each dune crest of the Umbra Dunes, we laid out a 10m measuring tape. Using numbers generated from a random number table we pinpointed a location along the tape where we used a soil sampler to sample the top 2.5cm of soil. Pulling the vegetation back, we bagged the sample in a labelled re-sealable bag. However, if someone collecting the soil didn't pull back as much vegetation as the person at the previous stop, the soil organic matter content would have appeared higher than it actually was, skewing the accuracy of our results.

Candidate 2

The accuracy of discharge data will have ultimately depended on how reliable the width and depth and velocity readings were. The accuracy of these factors and therefore the accuracy of discharge data in my graph would have depended on the weather conditions. Prior to the investigation, there was very wet weather meaning that there was good flow in the River Sillees. This good flow would have increased the reliability of our data collection. On the day of the data collection the weather was dry while the River Sillees had a good flow, once again increasing the reliability and therefore accuracy of my discharge data.

Question 2: Skills and Techniques in Geography
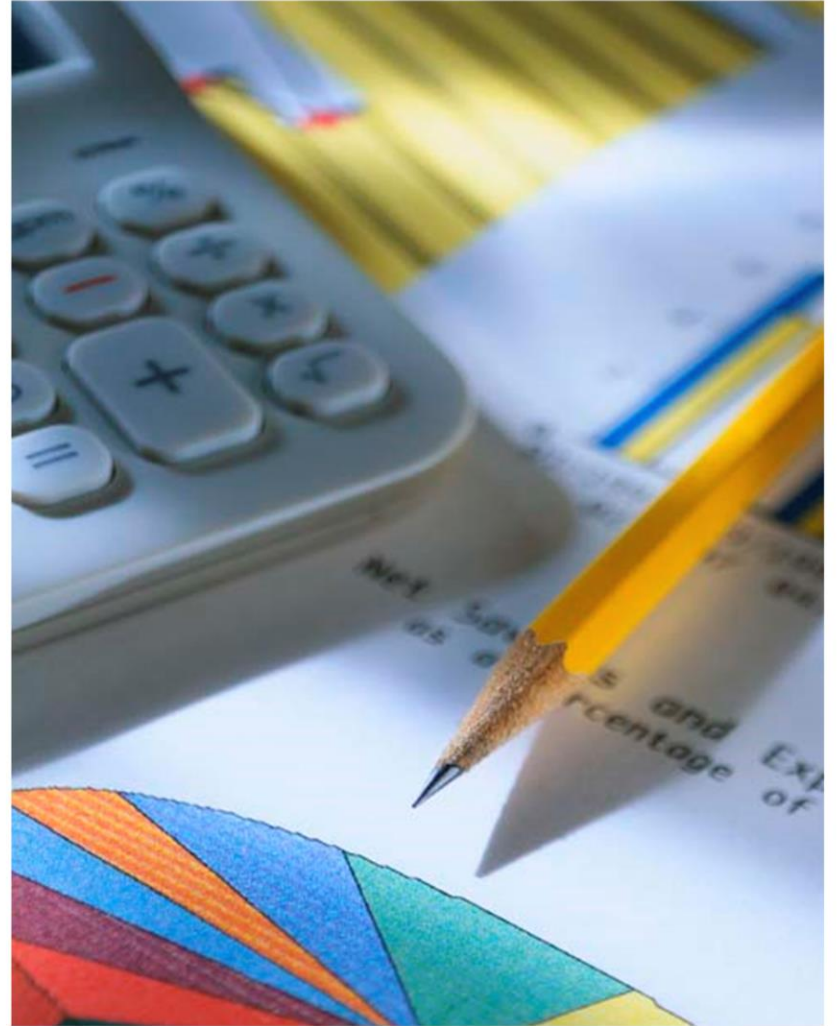
Question 2: Skills and Techniques in Geography

- You will be required to respond to qualitative and quantitative data from secondary sources.

- This question is worth **30 marks**.

- You should spend approximately **30 minutes** on this question.

Question 2: Topic Areas

Data Collection

Questionnaires

Sampling:
- Random
- Stratified
- Systematic
- Pragmatic
- Point, line or quadrat

Secondary sources:
- OS Maps
- Photographs
- Satellite Images
- Surface pressure or synoptic charts
- Remotely sensed images and data

Statistical Analyses

Measures of central tendency:
- Mean
- Median
- Mode

Measure of dispersion:
- Range

Spearman's Rank Correlation Coefficient

Nearest Neighbour Analysis

Graphical and Mapping Techniques

Mapping:
- Dot distribution
- Choropleth
- Isoline
- Flow line
- Annotated sketch maps

Graphical:
- Scatter
- Line
- Bar
- Pie
- Proportional
- Triangular

Questionnaires

Open and closed questions
Bipolar matrix

Common errors and issues

Survey considerations:
- Time of day
- Time of year
- Pilot testing
- Survey site/location

1. Have you visited Ambleside before?

    Yes   No

2. How long do you intend to stay?

 < 1 day   1 day   Several days   1 week   >1 week

3. How did you hear about Ambleside?

Advert/Flyer   Friend   Already knew
TV/Radio   Internet   Other

4. Where have you travelled from to visit Ambleside? _____
5. How far have you travelled today to get here?

    <5 km   20–30 km
    5–20 km   >30 km

6. How did you travel here today?
Car   Foot   Bicycle   Other
Bus/Coach   Train   Motorbike

7. What are your reasons for your visit here today (tick all that apply)?

Sightseeing   Walking/Hiking   Dog Walking
Visiting Friends   Picnicking/Eating   Work
Education/Scientific   Leisure/Recreation   Other

8. Have you visited/do you intend visiting any of the following nearby attractions?

Dove (Wordsworth) Cottage   Galava Roman Fort   Stockghyll Force Waterfall   Armitt Museum
Lake Windermere   Bridge House   Jenkan Crag   Other

9. Please read the following statements below on the impact of tourism, and tick where appropriate

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
There is too much traffic congestion in Ambleside					
Overcrowding has a negative impact on Ambleside					
Crime/Vandalism is evident in the area					
Litter has a negative visual impact					
Environmental disturbance/damage is evident					

Photographs

Spearman's Rank Correlation

1 (a) Study **Resource 1A** which relates to the initial stages of a Spearman's Rank statistical test used to investigate the relationship between Gross Domestic Product (GDP) per capita and life expectancy in 2009 for a sample of 14 countries.

Resource 1A

Country	X GDP per Capita ($)	Rank X	Y Life expectancy (years)	Rank Y	d	d²
Albania	3750	7	77	5	2	4
Australia	42279	3	81	2	1	1
Bangladesh	551	12	66	9	3	9
Belgium	43430	2	80	3	−1	1
Brazil	8114	5	72	7	−2	
Chad	596	11	49	13	−2	4
Denmark	55992	1	79	4	−3	9
Egypt	2269	8	70	8	0	0
Haiti	667	10	61	10	0	0
Italy	35084	4	82	1	3	
Kenya	759	9	54	11	−2	4
Mozambique	428	13	48	14	−1	1
Niger	352	14	51	12	2	4
Romania	7500	6	73	6	0	0

Source: World Bank data $\Sigma d^2 = 50$

Formula:
$$r_s = 1 - \left(\frac{6\Sigma d^2}{n^3 - n} \right)$$

where d = the difference in rank of the values of each matched pair
n = the number of ranked pairs
Σ = the sum of

Spearman's Rank Correlation Significance Graph and Table

Critical values for r_s
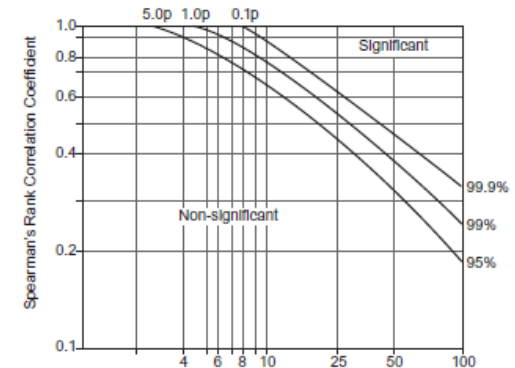
Degrees of freedom [Number of ranked pairs (n) – 2]

Critical values of Spearman's Rank Correlation Coefficient, r_s

Significance level

degrees of freedom	0.05 (5%)	0.01 (1%)
4	0.88	1.00
5	0.83	0.96
6	0.80	0.91
7	0.77	0.87
8	0.72	0.84
9	0.68	0.80
10	0.64	0.77
11	0.60	0.74
12	0.57	0.71
15	0.50	0.65

Nearest Neighbour Analysis

(b) A geographer studying service distribution in Greater Dublin, Ireland mapped the distribution of a chain of fast food restaurants within this area as illustrated in **Resource 1C** below.
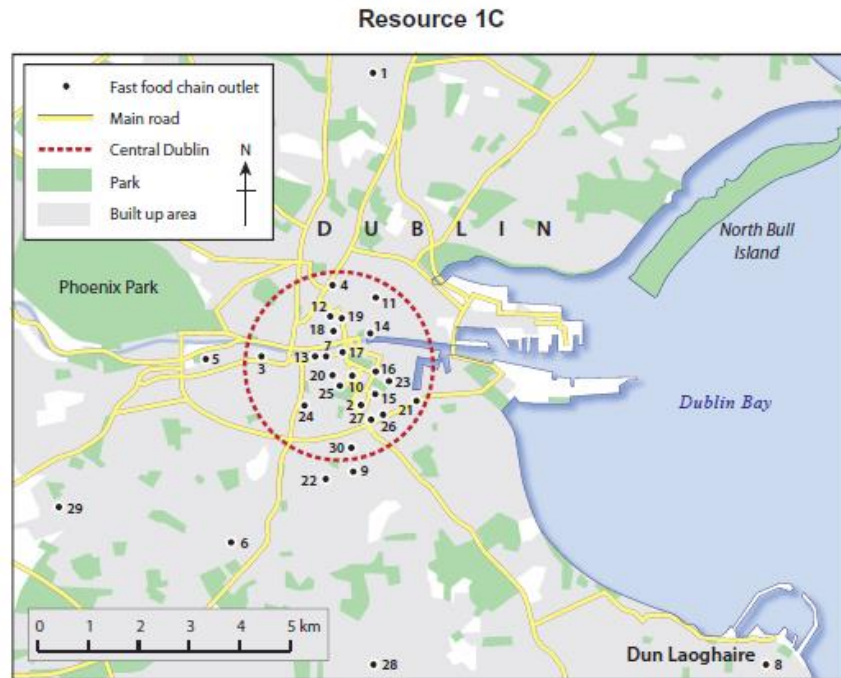
Resource 1C

Source: Principal Examiner

Resource 1D

Restaurant Number	Nearest Neighbour	Distance (km)
1		4.02
2	15	0.40
3	5	1.13
4	12	0.56
5	3	1.13
6	22	2.09
7	13	1.61
8		7.57
9	30	0.48
10	20	0.32
11	14	0.72
12	19	0.16
13	7	0.16
14	17	0.64
15	2	0.40
16	23	0.32
17	7	0.32
18	19	0.40
19	12	0.16
20	25	0.24
21	23	0.72
22	9	0.56
23	16	0.32
24	25	0.72
25	20	0.40
26	27	0.16
27	26	0.16
28	6	3.62
29		3.31
30	9	0.48

Sum: 33.28

Area: 194.21 km^2

Dot Distribution Maps

Resource 1A

Number on map (Resource 1B)	Central Mexican State	Population Total
1	Federal District	8 500 000
2	Hidalgo	2 250 000
3	Morelos	1 500 000
4	Puebla	5 000 000
5	Queretaro	1 500 000
6	State of Mexico	13 000 000
7	Tlaxcalo	1 000 000

Figures rounded to nearest 250,000
Source: INEGI – Mexico population 1910–2000 by state .xls

Resource 1B

Note:
Mexico City is located within area 1
———— State boundary

Key:

[Turn over
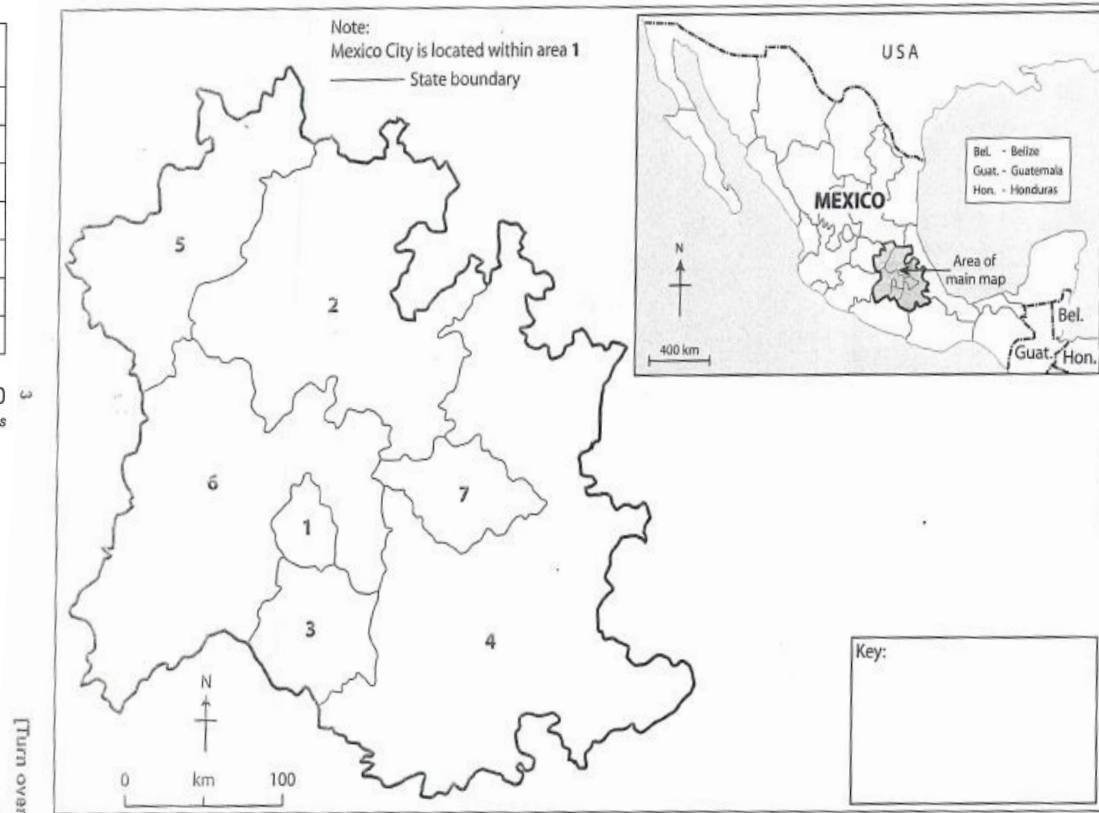
Choropleth Maps

Resource 1C

Region	Population density (people per square km)
Ecuador	47
Colombia	37
Venezuela	27
Brazil	21
Peru	21
Chile	21
Uruguay	19
Paraguay	15
Argentina	14
Bolivia	8
Guyana	3
Suriname	2
French Guiana	2
Falkland Islands	0.24

Isoline Maps/Diagrams

Resource 1A

Distance from river bank X

Depth	1 m	2 m	3 m	4 m	5 m	6 m	7 m
0.2 m	0.52 m s^{-1}	0.38 m s^{-1}	0.35 m s^{-1}	0.25 m s^{-1}	0.14 m s^{-1}	0.02 m s^{-1}	0.01 m s^{-1}
0.4 m	0.40 m s^{-1}	0.33 m s^{-1}	0.25 m s^{-1}	0.16 m s^{-1}	0.02 m s^{-1}		
0.6 m	0.34 m s^{-1}	0.28 m s^{-1}	0.20 m s^{-1}	0.10 m s^{-1}			
0.8 m	0.29 m s^{-1}	0.25 m s^{-1}	0.18 m s^{-1}				
1.0 m	0.23 m s^{-1}	0.15 m s^{-1}	0.05 m s^{-1}				
1.2 m	0.16 m s^{-1}	0.10 m s^{-1}					
1.4 m	0.10 m s^{-1}						

Position of Cross-section X ⟶ Y

River bank X

River bank Y

metres

Distance from river bank X (m)

—— 0.1 m s^{-1} —— Isovel (isoline) line joining points of equal velocity

• 0.15   River Velocity (m s^{-1})

Flow Line Maps

Source: Principal Examiner

Annotated Sketch Maps

Line Graphs

Resource 1A

Site	Distance from the inside bank of the meander bend (cm)	River depth (cm)
1	0	8
2	35	10
3	70	23
4	105	31
5	140	52
6	175	56
7	210	103
8	245	92
9	280	126
10	315	149
11	350	148
12	385	143

Resource 1B

Title of graph: _____
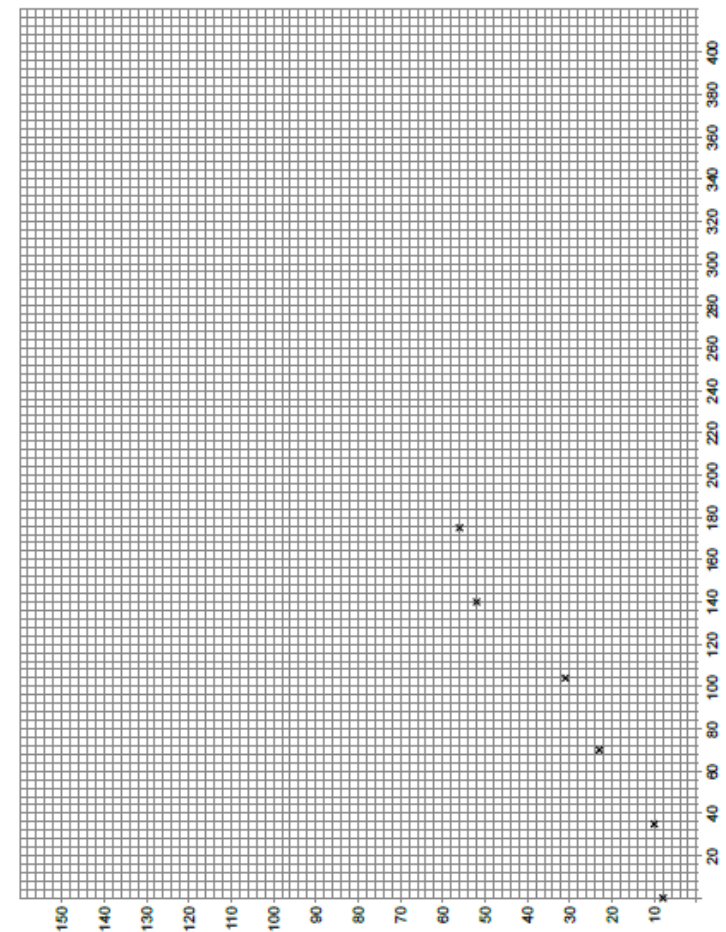
Bar Graphs

Resource 1E
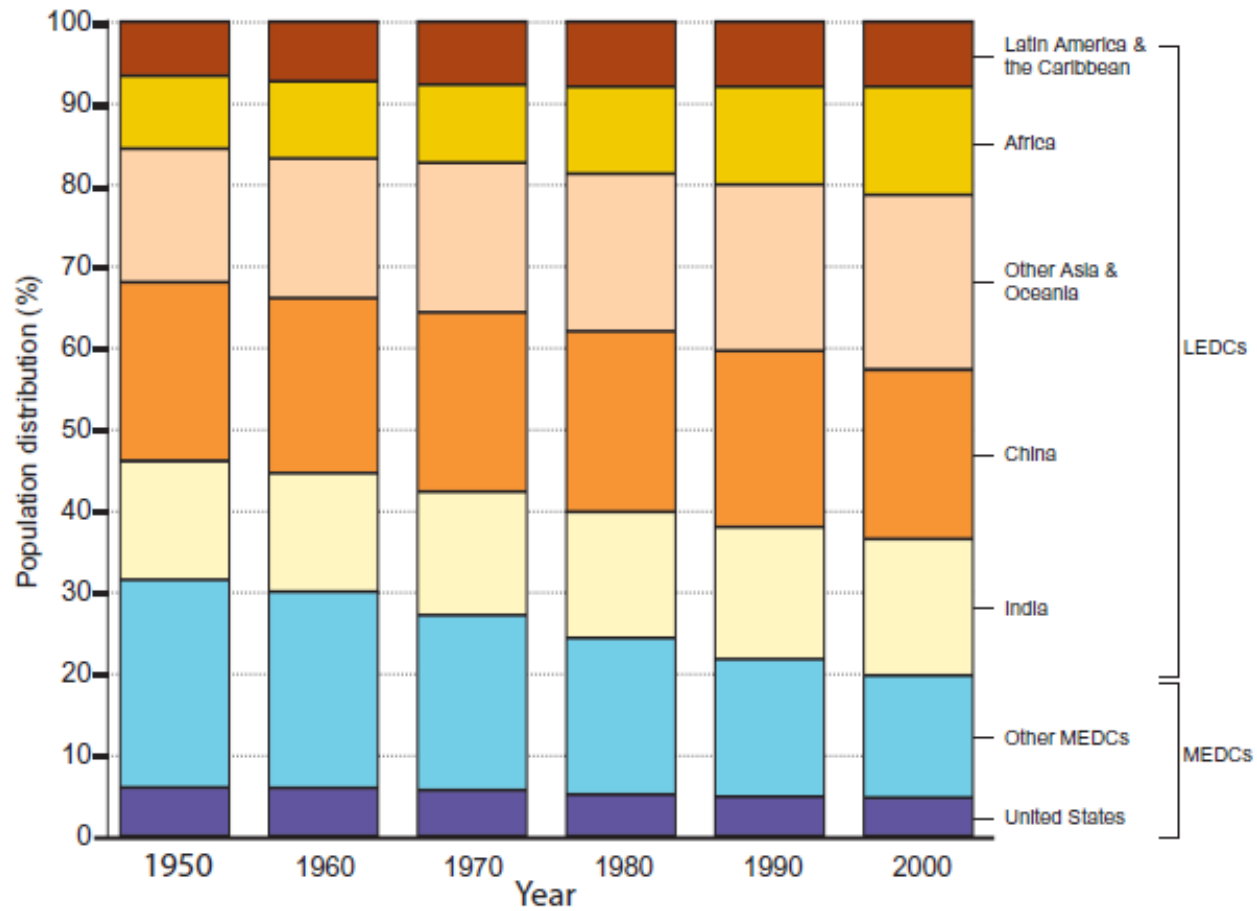
Pie Charts

Income group (dollars)	% of total households	Degrees for pie chart sector
less than 10 000	15.0	54
10 000–24 999	26.4	95
25 000–49 999	33.6	121
50 000–74 999	15.0	54
75 000–99 999	5.3	19
100 000–149 999	2.8	
150 000 and above	1.9	

Resource 1F

HOUSEHOLD INCOME ($) IN 1990
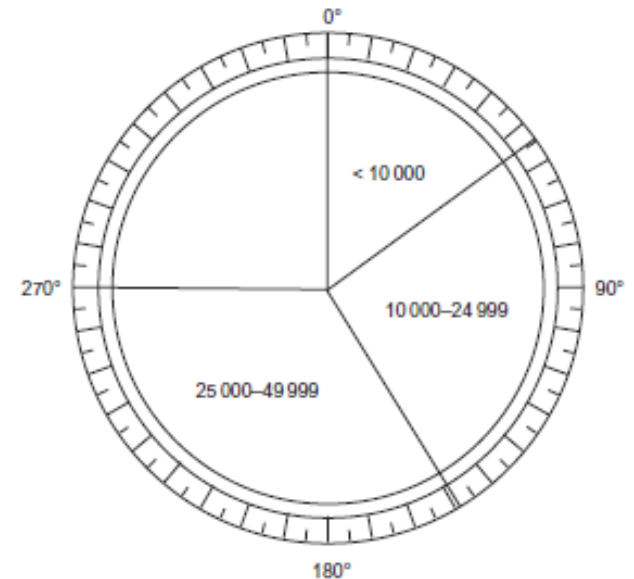
Source: www.CensusScope.org

Resource 1G

HOUSEHOLD INCOME ($) IN 2000
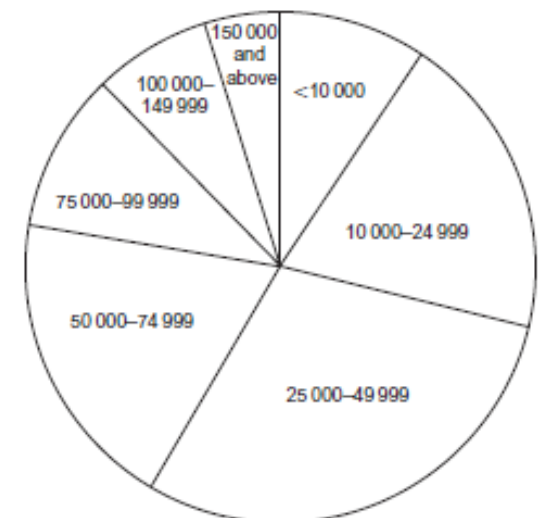
Source: www.CensusScope.org

Triangular Graphs
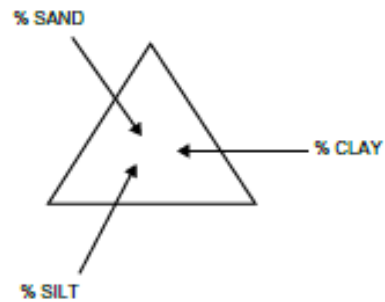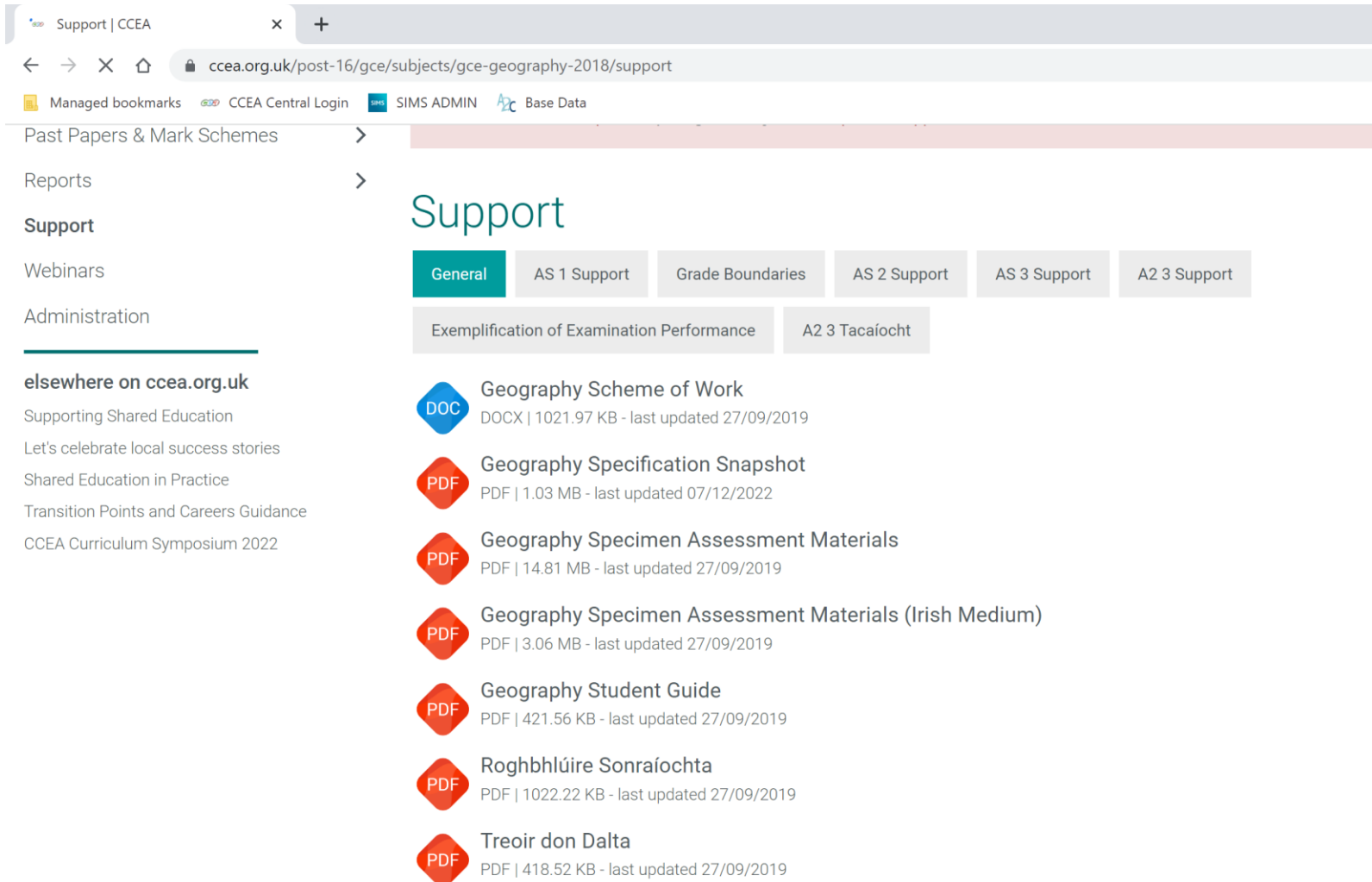
Resource 1D

	A: LOAM	B: SANDY CLAY	C: LOAMY SAND	D: CLAY
% SAND	40			10
% SILT	40			10
% CLAY	20			80
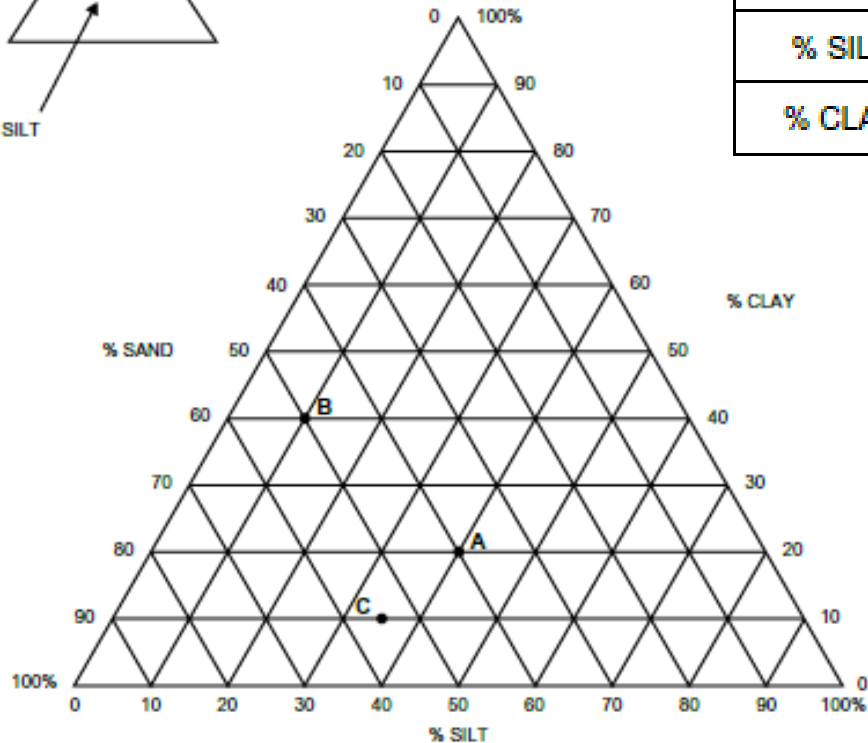
Support: CCEA Geography Microsite

Support: AS3 eGuide

eGUIDE//

Geography
AS3 – Fieldwork Skills and Techniques

Within the text of each section key words will be highlighted in red.

Relevant exam questions, tasks and cases studies have been provided where relevant.

The range of relevant web-based resources (sites, video, images) is limited in relation to this topic but where relevant these will be available in the text.

Support: Text book
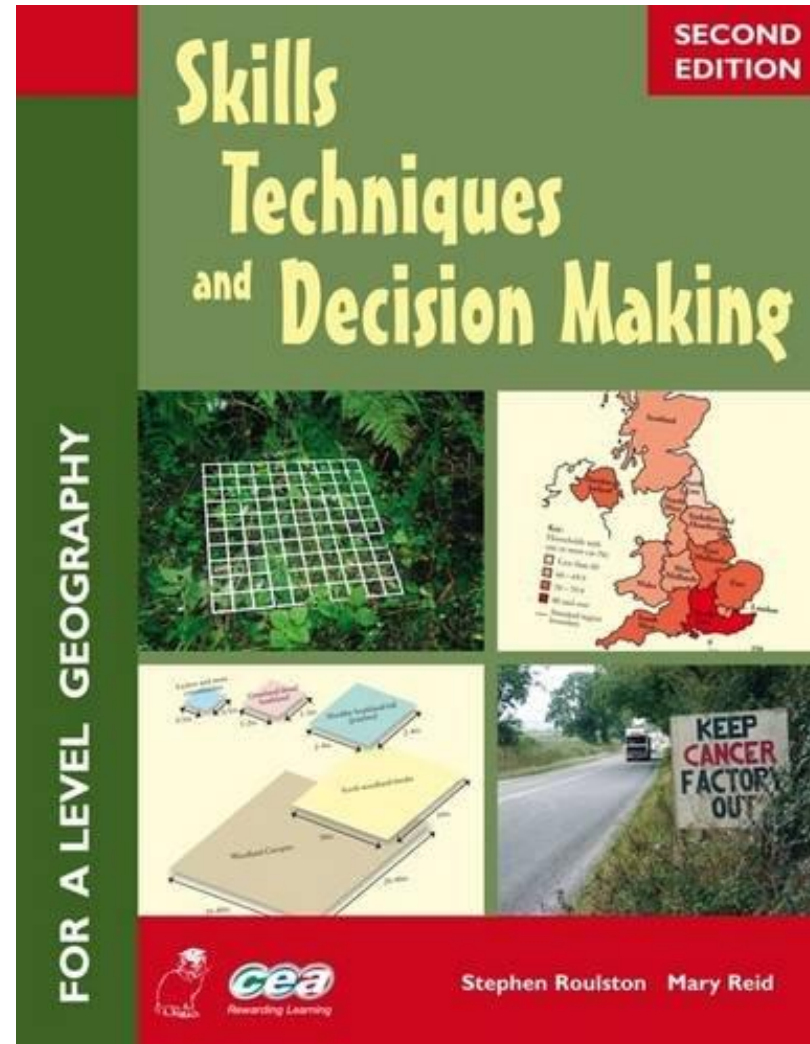
Where can I get help/support?

- Geography Teacher
- Specification
- Past Paper Examinations and Mark Schemes (2017, 2018, 2019, 2021 Assessment Resource, 2022)
- Legacy Past Papers (AS1 Q1 and AS2 Q1)
- Chief Examiner's Reports
- Geography CCEA Microsite
- CCEA – contact: phenderson@ccea.org.uk

GOOD LUCK!