



AS GEOGRAPHY 7036/2

Paper 2 Human geography and geography fieldwork investigation

Mark scheme

June 2019

Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the typical performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

The notes for answers provide indicative content. Students' responses may take a different approach in relation to that which is typical or expected. It is important to stress that examiners must consider all a student's work and the extent to which this answered the question, irrespective of whether a response follows an expected structure. If in doubt the examiner should contact their team leader for advice and guidance.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, i.e. if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Description of Annotations

Annotation	Description
?	Questionable point
[	Start of creditworthy passage
]	End of creditworthy passage
^	Missing detail / elaboration needed
AO1	Assessment Objective 1
AO2	Assessment Objective 2
Highlight	Use to highlight important phrases / examples or as a side-bar to highlight a creditworthy passage
JUST	Just at the level awarded or point just awarded
L1	Level 1
L2	Level 2
L3	Level 3
L4	Level 4
EG	Use of Example
EVAL	To show Evaluation
LNK	To show links being made
ASS	Assessment
BOD	Benefit of doubt
TV	Too vague
NAQ	Not Answering the Question
NC	Not creditworthy
Not Relevant	Wavy-line – use on side-bar to identify text that is not relevant
On Page Comment	Text box
Off Page Comment	Text box
SEEN	To show that work has been read and used on unanswered pages
H Line	Use to underline incorrect text
Tick	Use on point mark questions where creditworthy
SYN	Synthesis
Max	Max

Qu	Part	Marking guidance	Total marks
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Section A

01	1	Which one of the following is an example of where place-meaning has been influenced by a local community group? D	1 AO1 = 1
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01	2	The following statements are all taken from tourist brochures. Which statement highlights the regional connections of a place in Britain? B	1 AO1 = 1
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01	3	Outline how physical geography can influence place character. <u>Point marked</u> Candidates must show how this aspect of physical geography influences place character. Award one mark for each relevant point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> • Topography may influence place character for example, location in a steep, narrow valley may influence the growth and development of a settlement (1) and give it a distinctive narrow, linear 'shape' and/or give a sense of isolation (d). • Geology may influence place character as it may be used as a local building material (1), for example, in the Yorkshire Dales limestone has influenced the place characteristic of many villages (1d). • Natural resources such as coal may have given rise to industrial villages or towns (1) such as Sharlston, Yorkshire (1d). • Coastal location is likely to influence place character as some towns may have developed for tourists with distinctive buildings such as large hotels and other tourist amenities (1), and they are likely to follow a linear pattern mirroring coastal topography (1d). • A physical feature linked to a named location (without other reference to place character) can be credited with one mark (1) if it can be regarded as a distinctive feature of the place. Examples include: White Cliffs of Dover(1) or Durham's incised meander (1). Similar examples could be used. The Notes for Answers are not exhaustive. Credit any valid points.	3 AO1 = 3
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01	4	Using Figure 1a and Figure 1b, analyse economic and demographic changes in Kingston upon Hull. AO3 – Analysis of economic and demographic changes over time. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – Clear analysis of the quantitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence. Level 1 (1–3 marks) AO3 – Basic analysis of the quantitative evidence provided, which makes limited use of data and evidence in support. Basic connection(s) between different aspects of the data and evidence. <u>Notes for answers</u> The question requires analysis of the data shown in the graphs. Level 2 answers must make explicit reference to changes over time and make specific reference to the data to support points made. • Figure 1a shows the largest population change over the whole period is in 1891 with an increase of 32,000 people. This coincides with a period of time where the largest proportion of people is employed in manufacturing, but there does not appear to be any significant changes to employment structure at this time. • Figure 1a indicates that population change shows a greater increase for each subsequent census point between 1811 and 1891, with the exception of 1861 when it is 3500 less than 1851. • The positive population change recorded in 1961 was the smallest since 1811. • 1971 saw the first negative change in population from the preceding census and the decrease in population was greatest in 1981 with a loss of 19,500. In 1991, this negative population change had slowed to approximately half of the 1981 figure. • 2011 saw the first positive population change from the preceding census since 1961, an increase of 13,000 people, which is much smaller than the positive change seen at the end of the 19th century but still significantly reverses the negative change seen at the end of the 20th century. • Figure 1b indicates a sharp decline in the manufacturing sector since the 1960s and this coincides with a significant negative change in the population shown in 1971 census. • There is also a drop in the proportion of people employed in 'utilities, construction and transport' from the 1960s that seems to coincide with	6 AO3 = 6
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		the drop in manufacturing and negative population change between 1971 and 2001. • There has been an ongoing increase in the proportion of people employed in 'public services' since 1920, with a significant increase since the 1950s. (approximately 5% in 1920 and 28% in 2011). There has also been a smaller increase in those working in 'business services'. Consumer services have remained stable since the 1950s, but is the second largest employer after public services. • The figures show that agriculture has always been a small (and shrinking) part of the local economy. Mining employed a small percentage of the population between 1881 and 1921, but is not a significant part of employment structure in Hull. • Connections that link the data <u>within one figure</u> (e.g. employment structure in Figure 1b) can be considered for access to Level 2 marks if data manipulation supports this, but not for maximum marks. • Overall, there is a shift from a manufacturing-based economy towards a service-based economy. The manufacturing sector is continuing to decline. Population change was positive between 1811 and 1961, but saw a period of negative change between 1971 and 2001. This trend has been reversed in 2011 which appears to be later than the growth in the proportion of people employed in Public Services sector and the Business services sector. Credit any other valid approach.	
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01	5	For a distant place you have studied, assess the extent to which lived experience inevitably leads to an 'insider' perspective of this place. AO1 – Knowledge and understanding of the lived experience of people can lead to different or similar perspectives on place. Knowledge and understanding of 'insider' and 'outsider' perspectives of the distant place chosen for study. Knowledge of sources of evidence. AO2 – Application of knowledge and understanding by the assessment of how far lived experience may lead to 'insider' perspectives of the distant place, using appropriate knowledge of sources evidence to support judgement. <u>Mark scheme</u> Level 3 (7–9 marks) AO1 – Demonstrate detailed knowledge and understanding of how lived experience may lead to 'insider' and 'outsider' perspectives on place. AO2 – Demonstrate detailed application of knowledge and understanding of how lived experience may lead to 'insider' and 'outsider' perspectives on place. Synthesises information and uses appropriate evidence to fully support a conclusion about the extent to which lived experience leads only to an 'insider' perspective on place.	9 AO1 = 4 AO2 = 5
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		Level 2 (4–6 marks) AO1 – Demonstrate clear knowledge and understanding of how lived experience may lead to ‘insider’ and ‘outsider’ perspectives on place. AO2 – Demonstrate clear application of knowledge and understanding of how lived experience may lead to ‘insider’ and ‘outsider’ perspectives on place. Synthesises information and uses appropriate evidence to fully support a partial conclusion about the extent to which lived experience leads to only an ‘insider’ perspective on place. Level 1 (1–3 marks) AO1 – Demonstrate basic knowledge and understanding of how lived experience may lead to ‘insider’ and ‘outsider’ perspectives on place. AO2 – Demonstrate basic application of knowledge and understanding of how lived experience may lead to ‘insider’ and ‘outsider’ perspectives on place. Uses appropriate evidence to support a basic conclusion about the extent to which lived experience leads to only an ‘insider’ perspective on place. <u>Notes for answers</u> The question requires an assessment of how far lived experience leads to ‘insider’ or other perspectives in the distant place studied. Ideally, evidence should be used to support the response. AO1 • Knowledge and understanding of the distant place that has been chosen for study. • Knowledge and understanding of how lived experience may lead to an ‘insider’ perspective of this place. • Knowledge and understanding of different perspectives on or within the distant place studied, including ‘insider’ and ‘outsider’ perspectives on place. • Knowledge and understanding of evidence for ‘insider’ and ‘outsider’ perspectives on the distant place. • Knowledge and understanding of how lived experience may not always lead to an ‘insider’ perspective on a place. • Credit suggestions that factors other than lived experience may determine whether an ‘insider’ perspective is adopted or not, or that different perspectives on place may not be discernible. • Knowledge of sources of evidence from distant place studies AO2 • Application of knowledge and understanding to assess how far lived experience has or has not led to an ‘insider’ perspective on place. For example, lived experience may lead to a sense of ‘belonging’ to this place or a greater ‘attachment’ or ‘familiarity’ may lead to a feeling of being an ‘insider’ to this place. • Assessment of how far those that are new to a place may have more of an ‘outsider’ perspective and may not share the same perspective of being an ‘insider’ as those who have lived for longer periods of time in	
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	this place. • Assessment of how far there may be an 'outsider' perspective even for some who have considerable lived experience in a place. For example, certain 'groups' within the place may not feel a sense of being an 'insider' or accepted by the local community. The actions of others rather than lived experience may form these perspectives on place. Sections of the community that are marginalised or experience prejudice or discrimination may feel 'outsiders'. • Assessment of how far 'lived experience' may lead to people/groups to feel 'insiders' in certain locales within a place. For example, in an area that is more familiar or they are more socially familiar with. Some locales may be perceived to be 'hostile' and result in the perspective of being an 'outsider'. Also, some people living in a place may feel an 'insider' perspective at times, but not at others. • Assessment of how far there is evidence of lived experience leading to different perspectives on a place. It is possible that lived experience may lead to a less 'homogenous' perspective on place. For example, in a place that has a very mobile population or a place that is very culturally diverse or a small rural community. • Credit suggestions that lived experience may lead to 'other' perspectives on place. For example, some people who have lived in a place for a long time may have little attachment beyond the home and may not have a perspective of being either an 'insider' or 'outsider' to this place. • Evidence from the distant place study is synthesised to enable a rational, evidence-based conclusion to be reached about how far lived experience always leads to an 'insider' perspective on place. Credit any other valid assessment.	
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01	6	‘External agencies always focus on endogenous place characteristics when attempting to create specific ‘place-meaning’ Assess the extent to which you agree with this view. AO1 – Knowledge and understanding endogenous and exogenous factors contributing to the characteristics of a place. Knowledge and understanding of specific attempts by external agencies to create specific place-meaning. AO2 – Assessment of how far external agencies use endogenous factors to create specific place-meaning. Assessment of how far external agencies use exogenous factors to create specific place-meaning. <u>Notes for answers</u> This question makes connections between different parts of the specification content on Changing Places, specifically the linking the characteristics of places and the role of external agencies in creating place-meaning. Responses should focus on how far endogenous place characteristics have been used by external agencies to create specific place-meaning and may refer to specific qualitative evidence from distant or local places. AO1 • Knowledge and understanding of the role of external agencies in creating specific place-meaning. • Knowledge and understanding of exogenous and endogenous factors affecting place characteristics. Endogenous factors may include location, topography, physical geography, land use, built-environment and infrastructure, demographic and economic characteristics. Exogenous factors include relationships with other places. • Knowledge and understanding of how external agencies may use endogenous and exogenous factors to create specific place-meanings for specific purposes. • Knowledge and understanding that external agencies may include government, corporate bodies, local and community groups. • Knowledge and understanding of sources of qualitative evidence. • Knowledge and understanding of local or distant place studies. AO2 • An assessment of how far endogenous factors have been used by external agencies to create specific place-meaning. • Responses might examine, for example, how tourist material might attempt to create a ‘unique’ place identity by focusing on specific endogenous factors such as the local topography or important historical buildings or specific infrastructure such as leisure or shopping centres to attract specific groups of people to a place. • Endogenous factors may also feature heavily in local government material attempting to promote the town as a ‘unique’ place for business to invest in or in bids for regeneration money. Estate agents may highlight specific demographic characteristics of a place as a marketing tool. • Endogenous factors are likely to be used by external agencies when attempting to ‘market’ a place or give it a unique ‘brand’ to attract flows	20 AO1 = 10 AO2 = 10
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		of people or investment. • An assessment of how exogenous factors (relationships with other places) may be used by external agencies to create place-meaning. For example, tourist organisations may promote the relationships with other places as an attraction e.g. the migratory history and multi-cultural heritage of an area may be used to help create place-meaning. 'Connectivity' and 'accessibility' to other places may feature in place marketing for tourists and business to create the image of a 'dynamic' place. • Local community groups may place onus on exogenous factors such as developing links with other places as part of developing place-meaning. For example, churches may promote links with 'far' places. Local authorities may promote 'town-twinning' as part of developing place-meaning. • Some community groups may focus on exogenous factors when attempting to create place-meaning. For example, they may promote the town as part of a 'network' such as the 'transition town' movement or a 'sustainable' city. • A conclusion should make a judgement about how far endogenous factors are used by external organisations to create specific place-meaning. Some may argue that it will depend on the purpose of creating place-meaning and may change depending on what type of external agency is creating place meaning. Some may recognise that the process of creating place meaning may change over time. These suggestions are likely to produce a more balanced conclusion. Credit any other valid assessment.	
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Marking grid for Question 01.6

Level/ Mark Range	Criteria/Descriptor
Level 4 (16–20 marks)	- Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). - Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). - Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). - Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1). - Full and accurate knowledge and understanding of key concepts and processes throughout (AO1). - Detailed awareness of scale and temporal change which is well integrated where appropriate (AO1).
Level 3 (11–15 marks)	- Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). - Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). - Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). - Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). - Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). - Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	- Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). - Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). - Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). - Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). - Some knowledge and understanding of key concepts, processes and interactions and change (AO1). - Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	- Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). - Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). - Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). - Very limited relevant knowledge and understanding of place(s) and environments (AO1). - Isolated knowledge and understanding of key concepts and processes. - Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.

Qu	Part	Marking guidance	Total marks
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Section B

02	1	Outline one reason why drawing an annotated field sketch of a survey site would be useful when carrying out fieldwork. <u>Point marked</u> Award one mark (1) for an accurate stated reason and one mark for development (1d). Examples of information recorded on field sketches could be used as a development point. <u>Notes for answers</u> This will involve learned knowledge and understanding of the specification and/or of fieldwork carried out. • A field sketch would help to contextualise any data collected in the urban or physical landscape (1) and it might be helpful for interpreting or reviewing the data (1d). • A field sketch could highlight any geographical features that may be relevant to the study (1) and annotations could be useful qualitative data that contributes to the findings of the investigation (1d). • A field sketch could help the researcher record factors about the site that are specific to the time that the data was collected (1) or any unexpected features of the survey site (1d) or factors that may be subject to variation (1d) for example, canopy cover, river discharge levels etc. (1d). The Notes for answers are not exhaustive. Credit any valid points.	2 AO1 = 2
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02	2	Using Figure 2, suggest possible opportunities for <u>physical</u> geography fieldwork within the area shown in the photograph. <u>Point Marked</u> Award one mark (1) for each suggestion of what physical geography fieldwork could be carried out in this location. Allow additional mark for a developed point (1d). • There would be opportunities to investigate aspects of the water cycle (1) such as infiltration rates or interception rates (1d) and these could compare the areas with dense built environment and those areas with vegetation (1d). • The hill would provide an opportunity to investigate whether rates of infiltration vary depending on the height of the land (1). • The varied vegetation provides opportunities to investigate the impact of different vegetation types or canopy cover on the water cycle (1).	4 AO3 = 4
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		• There could be opportunities for small scale studies on the carbon cycle (1) such as measuring soil carbon content (1d). • There would also be opportunities for microclimate surveys (1) such as those investigating the urban heat island effect (1d). • A river is visible in the photograph so credit can be given to any aspect of river or surface water-based fieldwork. • Studies relating to water and air pollution related can be credited but not noise pollution or pollution that is otherwise unqualified. Credit any other reasonable suggestions related to physical geography fieldwork in relation to what can be seen in the photo.	
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02	3	Using Figure 2, outline one reason why an Ordnance Survey (OS) map of this area would be useful for planning a physical geography fieldwork investigation. <u>Point Marked</u> Award one mark for an accurate stated reason and one mark (1) for development (1d). • There would be more detail of the surrounding area on an Ordnance Survey map (1), for example, on a 1:25 000 map, types of vegetation could be identified (1d). • An OS map would be useful for identifying sample sites or devising a sampling strategy (1) such as random sampling from co-ordinates (1d). • Distances between survey sites could be measured (1) by using the scale of the map (1d). • An OS map could be useful for identifying any health and safety risks (1), such as waterways and roads (1d). • Contour lines would help to determine the height and/or gradient of the land (1) and could be used to select appropriate sampling sites for specific types of investigation (1d). Credit other relevant suggestions.	2 AO3 = 2
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02	4	State the aim of your fieldwork investigation. In your investigation, to what extent did presenting data using maps help with the analysis of the data collected? AO1 – Knowledge of the fieldwork enquiry that was carried out. Knowledge of cartographical and other techniques for presenting data. Knowledge and understanding of how data was analysed. AO2 – Application of knowledge and understanding to evaluate the extent to which presenting data using maps assisted with the analysis of the data collected. Assessment of the relative importance of maps in the analysis of data compared to the importance of other means of analysing data.	6 AO1 = 2 AO2 = 4
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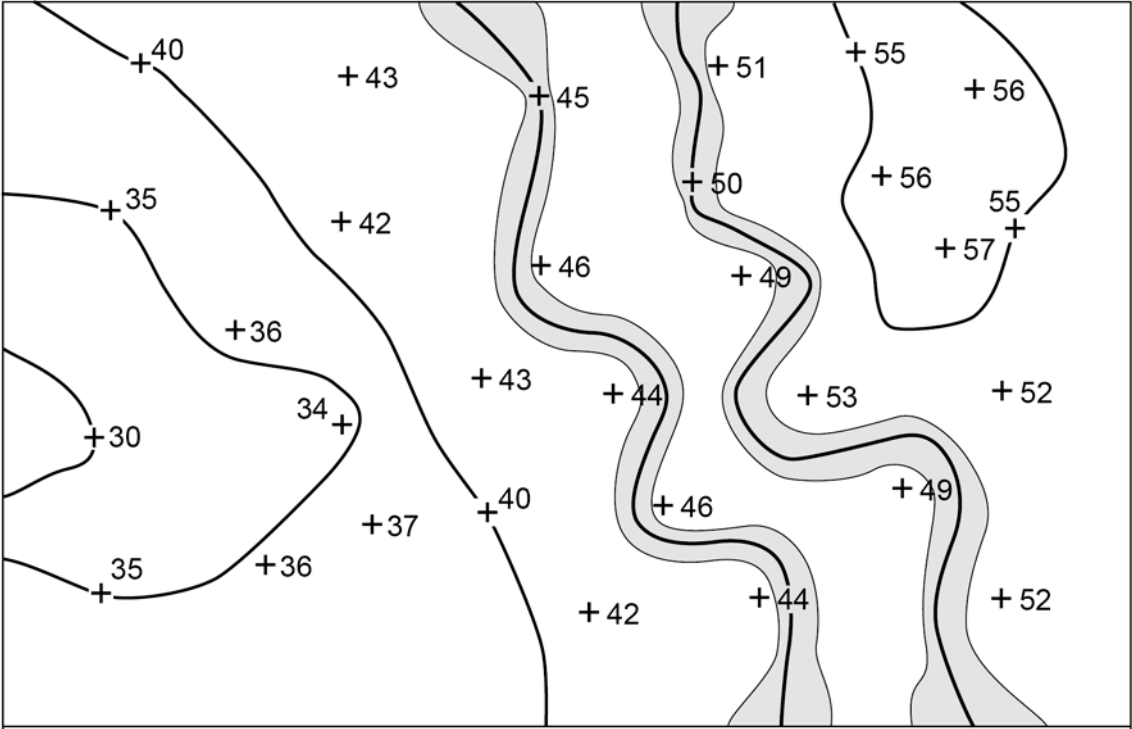
		<u>Mark scheme</u> Level 2 (4–6 marks) AO1 – Clear knowledge and understanding of presentation techniques and data analysis. AO2 – Clear evaluation of the techniques for presenting data to assess the relative contribution of maps in helping to analyse data, supported with evidence from the enquiry. Makes clear links between presentation techniques and data analysis. Clear conclusions reached about the extent to which presenting data using maps contributed to the analysis of data. Level 1 (1–3 marks) AO1 – Basic knowledge and understanding of presentation techniques and data analysis. AO2 – Basic evaluation of techniques for presenting data to assess the relative contribution of maps in helping to analyse data, supported with evidence from the enquiry. Makes basic links between presentation techniques and data analysis. Basic conclusions reached about the extent to which presenting data using maps contributed to the analysis of data. <u>Notes for answers</u> The question requires an evaluation of the importance of maps as a presentation tool used in the fieldwork investigation carried out by the candidate in relation to how the data was analysed. Accept responses where other techniques are linked more strongly to data analysis but the role of maps should still be evaluated. Accept cases of maps being presented as secondary data. AO1 • Knowledge and understanding of the fieldwork enquiry carried out, specifically ways that data was presented and analysed. • Knowledge and understanding of different types of maps used for presenting data and how they might be useful for helping to analyse both primary and secondary data collected. • Knowledge of other means of presenting quantitative and qualitative data. • Knowledge of relevant statistical or other means of analysing data. • Consideration of how data presentation may or may not contribute to data analysis. • Knowledge and understanding of possible strengths and limitations of techniques for presenting and analysing data. AO2 • Evaluation of the importance of cartographic presentation techniques in the analysis of data. • Evaluation of the contribution of maps to the analysis of spatial patterns across the area of study. More complex spatial analysis could be carried out using GIS if 'layers' of data were used, or primary data collected is overlaid onto relevant base maps. • Evaluation of the contribution of non-cartographical techniques for analysing data such as statistical, graphical or qualitative techniques.	
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		In some investigations these may be much more useful for data analysis than cartographical techniques. • The usefulness of cartographical presentation techniques in data analysis may be very limited in some types of investigation, particularly very small-scale investigations. In some studies, it may be argued that maps were more useful for identifying sample sites or locations but had little importance in the analysis of data. • Overall assessment of the importance of data presented as maps in the analysis of data collected. This is likely to depend on the aims and types of data collected. In some studies data presented on maps may be central to analysis whereas in other studies other techniques may assume more importance. Some may argue that a variety of techniques were equally important to the successful analysis data collected. Credit any other valid approach.	
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02	5	How far did the review of your investigation enable you to identify areas for further development? AO1 – Knowledge and understanding of the review of the investigation. Knowledge of how this review led to a consideration of further developments to the investigation. AO2 – Application of knowledge and understanding of the review process to evaluate how far this has led to a consideration of further developments. Makes a direct link between the review process and the suggested area (s) for possible development. <u>Mark scheme</u> Level 3 (7-9 marks) AO1 – Detailed knowledge and understanding of the review of the investigation. Detailed knowledge of areas for further developments. AO2 – Detailed application of knowledge and understanding of the review process and evaluates how far this has led to a consideration of further developments. Makes a direct link between the review process and the suggested area(s) for possible development. Level 2 (4–6 marks) AO1 – Clear knowledge and understanding of the review of the investigation. Clear knowledge of possible further developments to the investigation. AO2 – Clearly applies knowledge and understanding of the review process and evaluates how far this has led to a consideration of further developments. Makes a direct link between the review process and the suggested area (s) for possible development. Level 1 (1–3 marks) AO1 –Basic knowledge and understanding of the review of the investigation. Basic knowledge of possible further developments to the investigation. AO2 – Basic application of knowledge and understanding of the review process and explains how this has led to a consideration of further developments. Makes a basic link between the review process and the suggested area (s) for possible development. <u>Notes for answers</u> There is some requirement for knowledge and understanding of the review of the investigation, but the emphasis in this question is on applying knowledge and understanding of the review process to evaluate how far this led to a consideration of further developments to the investigation. Candidates who understand that ‘further developments’ relate to actions that should be taken at the location investigated, rather than improvements in their fieldwork, can be credited with a maximum L1 mark, if their points are geographically sound. AO1 • Knowledge and understanding of the different stages of the enquiry process. • Knowledge and understanding of the process of reviewing the success, or otherwise, of any stage of the enquiry (including method,	9 AO1 = 3 AO2 = 6
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		data presentation, conclusions and analysis) and in relation to the aims and objectives of the investigation. • Knowledge and understanding of identified further developments to any stage of the investigation. • Knowledge and understanding of possible further developments could include method, data presentation, conclusions and analysis, sampling strategy, primary and secondary data collection, or it may include new areas of investigation in the future. AO2 • Application of knowledge and understanding to explain why areas for further development were identified from the review. • The review of methods may have identified random or systematic errors in data collection that may need to be rectified to improve the reliability of data and the validity of methods may be questioned. Further developments are likely to include the collection of more, or different primary or secondary data, or changes to the method of data collection or sampling strategy. • The review of conclusions reached may question the validity of methods in relation to the key question or hypothesis and the reliability of data may also be questioned. If the conclusions were not reliably supported by relevant evidence there may be a need to collect more or different data in order to strengthen conclusions reached. • The review may identify ethical issues and question how successfully the harm to both people and the environment has been minimised. This may be noted as an area for further development. • A review of the secondary data may have led to a re-visit of secondary sources that would be useful for further comparison and analysis. • Application of knowledge and understanding of the review process in relation to possible further developments in the way that data was presented. Changes to data presentation may be suggested that would lead to clearer or more detailed analysis or for the purposes of visual clarity or accuracy. There may be questions about the validity of presentation techniques in relation to key questions and alternatives may be suggested. • An evaluation of data analysis may have led to alternative ways of analysing data that would lead to more valid or reliable conclusions. • Acknowledgement that the review process may lead to a number of identified areas for further development or minor modifications to the original investigation. Overall, there should be some acknowledgement that the review process and identification of areas for future development are closely linked to a cycle of enquiry. Credit any other valid approach.	
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03	1	Using Figure 4, outline the benefits of this sampling strategy. <u>Point marked</u> • Random sampling avoids bias when generating plot locations (1) and it is quick and easy to generate the plot locations (1d). • The sample needed to be stratified in order that a representative proportion of each urban area was included in the sample (1) and a systematic sample, along a transect, for example, or a random sample may not have sampled all of the urban areas making it difficult to make comparisons in line with the hypothesis (1d). Credit any other valid points.	2 AO3 = 2
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03	2	Complete Figure 6 by adding the 45 and 50 decibel isolines. • 1 mark for each line. • For credit, within the tolerance (shaded area) shown on the mark scheme. • Discretion (BOD) can be given to award 1 mark if there are slight inaccuracies on each line but the general pattern is as shown below.  Key: + Sampling point with noise level (in decibels)	2 AO3=2
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03	3	Using the completed Figure 6, assess the usefulness of using an isoline map to analyse this data. <u>Point marked</u> One mark for reasonable suggestion (1) and further marks for development (1d). Maximum 3 if <u>only limitations</u> are commented on. Responses must include some positive assessment of the usefulness for full marks. • There may be too few plot locations (1) to identify clear spatial patterns and this may make analysis difficult (1d). • The random sample points in each area may have been clustered so the isolines may not be evenly spaced (1) and this could make interpretation problematic (1d). • The interpolation needed to complete the isolines introduces subjectivity into data presentation (1). • An isoline map is more suited to data that has gradual changes over space rather than large changes between delineated areas (1). • The isoline map is a quantitative and objective way to present the data (1) making analysis of pattern easier (1d). • The isoline map gives a visual and geographical representation of the data to see areas of equal value (1) but this may have been enhanced by colour shading (1d). • Using GIS, the isoline map could be overlaid onto the land use map (1) and this would enable the student to interpret the link between land use and noise levels (1d) or field notes could be added to plot location using GIS to aid interpretation (1d). • There may have been more useful ways to present the data to aid analysis such as proportional circles/bars at each plot location (1). Credit any other valid points.	4 AO3 = 4
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03	4	In her review, the student stated that her investigation had enabled her hypothesis to be reliably tested. Using Figures 3, 4, 5 and 6, to what extent do you agree? AO3 – Use a range of information and techniques to synthesise and draw aspects of the study together. Evaluation and review of primary data collection. <u>Mark scheme</u> Level 3 (7–9 marks) Detailed use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Detailed evidence of drawing together different elements of the study in order to support the response. Level 2 (4–6 marks) Use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Clear evidence of drawing together different elements of the study in order to support the response. Level 1 (1–3 marks) Basic use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Basic evidence of drawing together different elements of the study in order to support the response. <u>Notes for answers</u> • Large sample with clear sampling strategy that would enable comparison between areas of the town (although some may suggest there is a limited number of recordings in each area and the study appears to have only covered <i>part</i> of the town and not <i>all</i> areas within it). • Use of technology has enabled accuracy in sampling and data recording and has led to reliable data. • The methods used, and the data collected were valid for testing this hypothesis. • The student might have suggested that the survey should be repeated at another time or on a different day or at a different time of year or time of day if the hypotheses could be reliably accepted. • The data collected only enables a clear comparison between areas of different land use identified by the student. • Noise pollution can be viewed as a ‘subjective’ concept and the recording of decibels may not reflect people’s own perception of noise pollution in these areas. • More qualitative data could have been collected to support the collection of quantitative data. • There was no attempt to measure sources of noise and observational data may have been useful here. For example, the result could have been influenced by traffic noise if the plot location was near to a main road or there may have been particular sources of noise on that day, such as construction work. • Noise levels may have varied across areas of study and influenced the	9 AO3 = 9
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		outcomes as the land use map only identified 5 large areas and the delineated areas may have masked differences within them. • The use of a smartphone app may have introduced human error. • There would have been a problem about how to assess types of noise. For example, if the recording was taken near to people talking or dogs barking as this could influence results. • There was no attempt to use statistical techniques to test the student's results to prove or disprove the hypothesis at a given confidence level. Students may suggest that this should have been considered when planning the data collection. Some may question whether a hypothesis-testing approach should really be adopted where such statistical testing is not possible or is not to be carried out. Credit any other valid approach.	
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04	3	Using the completed Figure 10, assess the usefulness of using an isoline map to analyse this data. <u>Point marked</u> One mark for reasonable suggestion (1) and further marks for development (1d). Maximum 3 if <u>only limitations</u> are commented on. Responses must include some positive assessment of the usefulness for full marks. • There may be too few plot locations (1) to identify clear spatial patterns and this may make analysis difficult (1d). • The random sample points in each area may have been clustered so the isolines may not be evenly spaced (1) and this could make interpretation problematic (1d). • The interpolation needed to complete the isolines introduces subjectivity into data presentation (1). • An isoline map is more suited to data that has gradual changes over space rather than large changes between delineated areas (1). • The isoline map is a quantitative and objective way to present the data (1) making analysis of pattern easier (1d). • The isoline map gives a visual and geographical representation of the data to see areas of equal value (1) but this may have been enhanced by colour shading (1d). • Using GIS, the isoline map could be overlaid onto the land use map (1) and this would enable the student to interpret the link between land use and rainfall (1d) or field notes could be added to plot location using GIS to aid interpretation (1d). • There may have been more useful ways to present the data to aid analysis such as proportional circles/bars at each plot location (1). Credit any other valid points.	4 AO3 = 4
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04	4	In his review, the student stated that his investigation had enabled his hypothesis to be reliably tested. Using Figures 7, 8, 9 and 10, to what extent do you agree? AO3 – Use a range of information and techniques to synthesise and draw aspects of the study together. Evaluation and review of primary data collection. <u>Mark scheme</u> Level 3 (7–9 marks) Detailed use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Detailed evidence of drawing together different elements of the study in order to support the response. Level 2 (4–6 marks) Use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Clear evidence of drawing together different elements of the study in order to support the response. Level 1 (1–3 marks) Basic use of information about the enquiry which is used to evaluate how planned data collection could enable the hypothesis to be tested. Basic evidence of drawing together different elements of the study in order to support the response. <u>Notes for answers</u> • Large enough sample with clear sampling strategy that would enable comparison between areas of the drainage basin (although some may suggest there is a limited number of recordings in each area). • The methods used, and the data collected were valid for testing this hypothesis and it enables a comparison between areas of different land use. • Use of crude measuring system may have resulted in inaccuracy in the data and resulted in questionable reliability. • There could be sources of uncertainty in the location of the rain gauges. For example, there may have been gaps in a woodland canopy that caused may have influenced recordings in the measuring cylinder. • The student might have suggested that the survey should be repeated at another time or on a different day or at a different time of year or time of day if the hypotheses could be reliably accepted. • There was no attempt to measure precipitation, so not able to derive interception losses accurately. Secondary data on rainfall may have been useful here. • More qualitative data could have been collected to support the collection of quantitative data. • Precipitation may have varied across the drainage basin. • Smaller and larger rainfall events may influence outcomes. • Overall, to reliably test the hypothesis, the investigation needed to examine other variables that may have affected interception rates eg	9 AO3 = 9
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		length and intensity of rainfall event, possibility of stemflow affecting results etc. • The land use categories may have marked differences within them. For example, there may have been differences between different types of woodland. • There would have been a problem about how to place the measuring cylinders in areas with housing, roads etc. • There was no attempt to use statistical techniques to test the student's results and this should have been considered when planning the data collection and this may have increased confidence when accepting the hypothesis. Credit any other valid approach.	
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