



AS

Geography

7036/2

Human Geography and The Geography Fieldwork Investigation (New)
Final Mark Scheme

7036

June 2017

Version/Stage: v1.0

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 Assessment Writer.

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 average 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.

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, ie 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.

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
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
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

Qu	Part	Marking guidance	Total marks
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01	1	Which of the following data sources involves a qualitative approach to determine people's lived experience of a place? B	1 AO1=1
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01	2	Below is a list of quotes by people about the place where they live. Which quote best describes an exogenous factor affecting their sense of place? B	1 AO1=1
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01	3	Describe one way in which corporate bodies can try to influence or create specific place meanings. <u>Mark scheme</u> <u>Point marked</u> Award 1 mark for each relevant point with extra mark(s) for developed points (d). Award 1 mark for the example of strategy given. <u>Notes for answers</u> The answer requires only one strategy by a corporate body. One mark is available for naming the strategy with subsequent marks awarded for developing the strategy and outlining how specific place meanings are created. The answer does not require a specific strategy. If they have done more than one strategy, credit the best example. • Corporate bodies can try to manipulate perceptions of place to make it more appealing to visitors/residents. This can be through rebranding.(1) • Promotion can be done using slogans, adverts and brochures to advertise the new place meaning. (1) • Eg Hull was awarded Hull City of Culture 2017 by the Department of Culture and Media (1). • This was to promote arts and culture (1) to create a sense of regeneration and celebration of art in Hull (1). • The event is for one year and uses different slogans across the year such as 'Roots and Routes' (1) to celebrate migration and change in Hull (1) • This means that Hull's reputation grows (1) this might attract more investment both locally and nationally (1)(d).	3 AO1=3
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01	4	Contrast the usefulness of Fig 1a and 1b in representing the physical geography of the area North / North-East of Skelwith Bridge. AO3 – Interpretation of, and comparison between, the two maps. Evaluation of the usefulness of the two maps for showing features of physical geography. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – Clear evaluation of the qualitative and 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 evaluation of the qualitative and quantitative evidence provided, which makes appropriate use of data in support. Basic connection(s) between different aspects of the data and evidence. Max Level 1 if there is no mention of physical geography or no contrast of the two sources. <u>Notes for answers</u> The question requires a contrast between the two maps and an evaluation of their usefulness in showing features of physical geography (relief, drainage). Responses should identify features of physical geography evident in the two maps and contrast the maps in terms of their usefulness in showing these features. AO3 • The area directly to the North of Skelwith Bridge has higher relief to the west but is flatter to the East. This is clearly depicted on the OS map but is not shown on the Wainwright map. • The area South of Loughrigg Fell is clearly very steep and mountainous. Loughrigg fell reaches a height of 335m according to the OS map. The actual height is not depicted on the Wainwright sketch • There is a large lake (tarn) called Loughrigg Tarn that measures 0.35km across. This is also shown on the sketch map but it appears much larger in comparison to other features • Many streams flow out of the Tarn into the River Brathay. These are visible on the OS map but not evident on the sketch map • Wainwright's sketch has a 3D element which clearly represents the shape of the mountains / relief clearly and the	6 AO3=6
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		summits are clearly visible. • The contours are very close on the OS map so it is difficult to visualise the relief. • The OS map is much more complete in recording physical features as there is many omissions from the sketch map • Responses may also observe that the sketch map is much older using imperial measurements and therefore perhaps out of date. • Responses may focus on distortion in the sketch map so some things appear larger (eg the tarn), whilst others are smaller. • Usefulness in terms of the audience – for example the sketch may be useful for walkers as it has annotations to help and important/interesting features are labelled.	
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01	5	Figure 2 shows a regeneration scheme in Sheffield. With reference to Figure 2, assess the extent to which money and investment might change people's lived experience in this place. AO1 – Knowledge and understanding of how money and investment can alter people's lived experience. Understanding the impact of regeneration AO2 – Application of knowledge and understanding to be able to assess the impact on Park Hill by interpreting the evidence in Figure 2. Demonstrating the extent to which people's lived experience has changed <u>Mark scheme</u> Level 3 (7–9 marks) AO1 – Demonstrates detailed knowledge and understanding of the concepts, interactions and change. Detailed knowledge and understanding of the changing characteristics. AO2 – Demonstrates detailed application of knowledge and understanding to the novel situation and the extent to which this may have caused change. Analysis and evaluation is detailed and well supported with appropriate evidence. Level 2 (4–6 marks) AO1 – Demonstrates clear knowledge and understanding of the concepts, interactions and change. Clear knowledge and understanding of the changing characteristics. AO2 – Demonstrates clear application of knowledge and understanding to the novel situation and some evaluation of the extent to which this may have caused change. Analysis and	9 AO1=4 AO2=5
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		evaluation evident and supported with some appropriate evidence. Level 1 (1–3 marks) AO1 – Demonstrates basic knowledge and understanding of the changing characteristics. May note only one change AO2 – Demonstrates basic application of knowledge and understanding to the novel situation. Analysis and evaluation basic and supported with limited appropriate evidence. May perceive that there is total change. If the answer is not clearly focused on Figure 2 = 0 marks. There is no credit for alternative examples. <u>Notes for answers</u> The question requires use of Figure 2 only. They should be referring to observed changes evident from the resource and interpreting the impact on people's lived experience in Park Hill. AO1 • Knowledge and understanding of the changes evident in the resource. There is a variety of changes evident and there is not a requirement to cover all of them. • Changes to the built environment for example, exterior of flats, interior design, modern furnishings and finishing. The outside space has also been landscaped, providing outdoor space for residents • Changes to the function of Park Hill, services on lower floors such as the nursery, retail and entertainment. Space for new businesses. • Some characteristics remain unchanged for example the walkway / bridge still has graffiti visible • Knowledge and understanding that this is a partnership scheme with several investors. Thus involving several stakeholders. Money and investment have allowed the scheme to take place. AO2 • Application of knowledge and understanding to show how changes have impacted on people's lived experience of Park Hill. These could be positive or negative. They can be on an individual level or the effects on the whole community • An assessment of the extent to which people's lived experience has changed due to the regeneration scheme, showing an appreciation of how money and investment have led to the changes • Analysis of the degree of change, showing an understanding of how some characteristics remain unchanged. An appreciation of how this may be a deliberate attempt by the	
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		project managers to retain some of the older characteristics of Park Hill. The impact this may have on older residents. • An assessment of the extent to which characteristics have changed as a result of investment / money. An understanding of how some characteristics may have changed as a result of consultation with residents / stakeholders eg retaining the graffiti covered walkway • An understanding of how interpretation of the degree of impact might be positive or negative depending on viewpoints of stakeholders. An interpretation might be that lived experience is about more than solely what money can buy. • Students may also consider the bias of the source material and how this may impact on their assessment of the impact the regeneration project has had.	
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01	6	You have studied a local and a distant place Assess the extent to which the demographic characteristics or patterns of social inequality are influenced by the built environment in both your local and your distant place. AO1 – Knowledge and understanding of the nature of the chosen places, the demographic characteristics or social inequality present in both places. Knowledge and understanding of the built environment in both places. AO2 – Analysis of connections between the built environment and the demographics or social inequality. Assessment of the extent to which built environment is responsible for the characteristics of both places <u>Notes for answers</u> The question makes connections between different parts of the specification content on Changing Places, specifically the linking of the built environment with either demographics or social inequality. Responses should focus on an assessment of the extent to which the built environment determines those characteristics. A legitimate approach would be to consider other factor that might be more important. There is no requirement to compare or contrast the two places. For L4 there should be some balance in quality for both places. Max L2 if only one place considered.	20 AO1=10 AO2=10
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		AO1 • Knowledge and understanding of endogenous factors contributing to the character of place, particularly the built environment • The built environment consists of all man-made features present in a settlement and could include a variety of functions for example residential, industrial, retail or business environments, roads and recreational spaces • Responses could consider changes to the built environment for example regeneration projects, brownfield sites, greenfield sites. • Knowledge and understanding of the local and distant place and the different groups that live there. • Knowledge and understanding of the demographic characteristics or social inequality present in both the local and the distant place. AO2 • Evaluation of the ways that the built environment may affect demographic characteristics (eg population structure, ethnicity) or social inequality (eg poverty, access to services, health) • Responses might examine, for example, the types of housing on levels of poverty or breakdown of resident age groups. Clearly the effects of the built environment will vary between different groups in the community and between both places, depending on the characteristic of the place. • Impacts of the built environment could consider change over time, for example the impacts of a new shopping centre or industrial park may cause change in demographics and social inequality. Regeneration projects may have large impacts on population characteristics. Such change could be positive or negative and both approaches are equally valid. • There may be an assessment of recent changes in the built environment and assessing how they might change in alternative possible futures • A comparative approach, allowing a contrast in the extent to which the built environment affects characteristics in both places. This would be a perfectly legitimate response. • Analysis of connections between elements of the built environment and the way these affect both individuals and the community as a whole • Assessment of the extent may consider that other endogenous factors or exogenous factors are more important than the built environment, e.g. physical geography and links to other places • Assessment of the extent may consider that the demographics / social inequality may influence the built environment. • Conclusion should refer to the relative significance of the built environment in determining the demographics or level of social inequality.	
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Marking grid for Question 1.6

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.

02	1	Study Figure 3 a photograph of a fieldwork location in the Peak District, England. Annotate Figure 3 to outline risks associated with undertaking fieldwork in this location. <u>Point marked</u> The command is annotate. There should be a brief description of the risk. No marks for single word identification of risks. Marks can be awarded for clear developed risks. The annotation must connect with feature in photograph. NB No credit for identification of hazards. The question asks for risks so more than one risk needs to be identified for full marks. A range of risks are present in the photograph and can be credited as long as they are visible and likely, such as: • frost/sleet covered ground present so risk of hypothermia (1), this could also make paths slippery (1) • steep slopes/frost covered footpaths could cause slips and falls (1) • overhanging banks mean risk of falling into the river (1) • the river may present a risk of drowning (1) • slippery stones in stream mean risk of falling in water (1) the cold water would increase risk of hypothermia (1) • boulders near river bank could cause a trip hazard (1) • upland stream in cold weather could present hypothermia risk (1). • There is fog visible in the background which could present a risk of getting lost (1). NB This is the only acceptable reference to atmospheric conditions	4 AO3=4
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02	2	Suggest how you could use a weather map to help minimise a likely risk in Figure 3. <u>Point marked</u> The use of the weather map must be connected with a risk that would be applicable to figure 3. Use of the weather map should be linked to minimising the risk. There is credit for one risk only. 1 mark reserved for explicit reference to a weather map. • A weather map shows temperatures so I would know how cold it was going to be (1) and I could pack spare clothing/wear extra layers (1). • If the isobars are close together this would suggest that it could be windy increasing the wind chill factor (1) so I would need to wear a wind-proof jacket/wear plenty of layers (1). • The weather map will show warm/cold fronts approaching this could indicate stormy weather and the risk of heavy rain, strong winds (1) so I would need to take waterproofs (1). • It might rain so you would need to take waterproofs (1) • If the weather is inclement then you would you choose to go on another day (1)	2 AO3=2
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02	3	Explain how you used one method of primary data collection to achieve the aim of your fieldwork investigation AO1 – Knowledge and understanding of the data collection technique and aims. AO2 – Application of knowledge and understanding to show how the primary data collection technique helped to achieve the aim <u>Mark scheme</u> Level 2 (4–6 marks) AO1 – Clear knowledge and understanding of the sequence of the data collection method. Clear understanding of the aim of the enquiry. AO2 – Clearly applies knowledge and understanding of data collection method to how it met the aim of the investigation. Clear justification of the method with reference to the aim. Level 1 (1–3 marks) AO1 – Basic knowledge and understanding of the data collection method. Basic knowledge and understanding of the aim. AO2 – Basic application of knowledge and understanding of the method to the aim. Limited justification of the method in terms of meeting the aim. Basic link between the method and the aim. <u>Notes for answers</u> There is some requirement for description of the method to allow a clear understanding of how the method is relevant to the aim. However, the emphasis is on the link between the method and the aim. The description of the method should show how this was appropriate in helping to achieve the aim. The question requires only one method of data collection. The method must be primary data collection so there should be a clear sense that the candidate collected the data. AO1 • Knowledge and understanding of the sequence of the data collection method • Knowledge of different aspects of the primary data collection such as sampling strategies, selection of quantitative and /or qualitative techniques. Awareness of strategies to ensure accuracy and reliability such as timings, equipment, repeat measurements • Knowledge of the locational context in terms of selection of sites for investigation	6 AO1=2 AO2=4
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		- Knowledge and understanding of the aim of the investigation. AO2 - Application of knowledge and understanding of the data collection method to explain how the aims were met. Focus on how the method was designed in such a way as to investigate the aim - Any stage in the data collection process, (such as sampling strategies, pilot testing, equipment used, recording of data collection) can be used to show how the aims were met. - Justification of the data collection technique to ensure accuracy and reliability, thereby meeting original aims. Responses may focus on how they ensured accuracy in the method, allowing them to achieve the aim - Some responses may state how they overcame limitations to achieve the aim, for example by improving their original method - An overall sense of the effectiveness of the method of data collection in achieving the aim	
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02	4	Outline a data presentation technique used in your enquiry and assess its usefulness in helping you to interpret the data. AO1 – Description of the presentation technique itself AO2 – Evaluation of the effectiveness of the data presentation technique in the interpretation of data. Linking the usefulness of data presentation to the skill of analysis <u>Mark scheme</u> Level 3 (7–9 marks) AO1 – Detailed description of the presentation technique with specific reference to fieldwork data presented. AO2 – Detailed assessment of how the presentation technique enabled analysis of data. Rational conclusions reached on the effectiveness of the technique and / or the limitations in helping candidates to effectively interpret data. Level 2 (4–6 marks) AO1 – Clear description of the presentation technique with some reference to fieldwork data presented AO2 – Clear assessment of how the presentation technique enabled analysis of data. Clear reference to the effectiveness of the technique and / or the limitations in helping candidates to interpret data.	9 AO1=3 AO2=6
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		Level 1 (1-3 marks) AO1 – Basic description of the presentation technique with some reference to fieldwork data presented. AO2 – Basic assessment of how the presentation technique enabled analysis of data. Some basic references to the effectiveness of the technique and / or the limitations in helping candidates to interpret data. <u>Notes for answers</u> The question requires both an outline of the technique and an assessment of the effectiveness of the data presentation technique used in helping to interpret data. The outline should describe the presentation technique used. Diagrams may be used in support. The second command is 'assess' so a legitimate response would be to consider the strengths and limitations of the technique in helping candidates to analyse data and the subsequent interpretation of results. For L2 and L3 there must be reference to specific data from the candidate's own fieldwork Statistical techniques such as Spearman's Rank are not presentation techniques and not therefore creditworthy. AO1 • Knowledge and understanding of the fieldwork enquiry carried out, specifically the purpose of the enquiry, details of the data presentation methods and their justification. • Familiarity with the location visited including details of data collected in terms of information presented. • Knowledge and understanding of the process of presenting the data, including the variables used, locational context, selection of an appropriate technique and the sequence used to construct it • Awareness of strategies for ensuring accuracy of data presentation, selection of appropriate techniques and why the techniques is suitable for the data collected. • Knowledge and understanding of the process of data analysis, including the critical examination of analysis techniques developed from the data presentation AO2 • Assessment of the effectiveness of data presentation technique in enabling data analysis. An awareness that the technique enabled candidates to interpret results. There may be reference to being able to see relationships between data sets, trends, patterns, identification of anomalies. • Assessment of the usefulness may be linked to limitations of the technique. There may be issues with accuracy of data presentation techniques, clarity in identification of specific results, absence of locational context, range of data,	
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		problems with scales and comparison across groups, • Credit suggestions for alternative techniques that may have aided clearer analysis eg piloting other techniques or how an alternative might have allowed different judgements / interpretation to have been made. • In suggesting how they used the technique to analyse data, responses may focus on additions to the original technique such as adding a line of best fit to a scattergraph or drawing a trend line onto a line graph. • The assessment might show them to have been successful in analysing the data. In that case, there should be a clear connection between the data presentation and the analysis for example referring to specific results and / or anomalies. This would include actual results and the subsequent interpretation of those results	
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02	5	Explain why statistical techniques are useful when students are analysing data for a geographical fieldwork investigation. <u>Mark scheme</u> Point mark. Award 2 marks for knowledge and understanding of statistical techniques. (AO1) No credit for simply naming the technique. They do not need to name a technique. The statistical <u>technique</u> required at AS is Spearman's Rank but any other is creditworthy. Also credit statistical skills such as measures of central tendency. <u>Notes for answers</u> • A statistical technique can tell you the strength of a relationship / correlation to test your hypothesis (1). • You can compare it to a critical value to test the significance (1) • It will tell you how confident you can be that results did not occur by chance (1) • Credit specific techniques such as Mann Whitney allows you to compare the median of two data sets (1) therefore you can see if there is a significant difference (1) • Standard deviation means you can test how representative the mean is(1) so you can see how data is distributed / spread around the mean (1) • Statistical techniques allow for precision (1) and represent the application of well-established and commonly understood and agreed procedures acceptable to all (1)	2 AO1=2
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03	1	Two values are missing from the dispersion diagram in Figure 6. Plot the missing values from the table below on to Figure 6 <u>Mark scheme</u> • 1 mark for each correct plot • Plots should be a cross. Max 1 mark if plots correct but the plot is not a cross • It is not necessary to write the value next to the plot	2
			AO3=2

03	2	Complete the table and calculate the standard deviation to two decimal places. Show your working <u>Mark scheme</u> • 1 mark for getting the table correct (including the use of the negative value) • 1 mark for correct substitution of number in the formula to show working • 2 marks for correct calculation of SD to two decimal places. (Max 1 if to three or more decimal places or only 1 decimal place. These must be correct i.e. 2.4 or 2.412) <table><tr><th>% residents educated to degree level (x)</th><th>$x - \bar{x}$</th><th>$(x - \bar{x})^2$</th></tr><tr><td>10.0</td><td>1.31</td><td>1.72</td></tr><tr><td>8.3</td><td>-0.39</td><td>0.15</td></tr><tr><td>11.0</td><td>2.31</td><td>5.34</td></tr><tr><td>9.0</td><td>0.31</td><td>0.10</td></tr><tr><td>10.7</td><td>2.01</td><td>4.04</td></tr><tr><td>5.7</td><td>-2.99</td><td>8.94</td></tr><tr><td>5.4</td><td>-3.29</td><td>10.82</td></tr><tr><td>7.5</td><td>-1.19</td><td>1.42</td></tr><tr><td>13.1</td><td>4.41</td><td>19.45</td></tr><tr><td>6.2</td><td>-2.49</td><td>6.20</td></tr><tr><td>$\Sigma x = 86.9$</td><td></td><td>$\Sigma(x - \bar{x})^2 = 58.18$</td></tr><tr><td>$\bar{x} = 8.69$</td><td></td><td></td></tr></table> Key σ = Standard deviation x = Individual value $\bar{x}$ = Mean n = Number in the sample Σ = Sum of Standard deviation formula $\sigma = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n}}$ Show your working: $\sigma = 2.41$	% residents educated to degree level (x)	$x - \bar{x}$	$(x - \bar{x})^2$	10.0	1.31	1.72	8.3	-0.39	0.15	11.0	2.31	5.34	9.0	0.31	0.10	10.7	2.01	4.04	5.7	-2.99	8.94	5.4	-3.29	10.82	7.5	-1.19	1.42	13.1	4.41	19.45	6.2	-2.49	6.20	$\Sigma x = 86.9$		$\Sigma(x - \bar{x})^2 = 58.18$	$\bar{x} = 8.69$			4 AO3=4
% residents educated to degree level (x)	$x - \bar{x}$	$(x - \bar{x})^2$																																								
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03	3	Use the standard deviation values to contrast the two data sets. <u>Mark scheme</u> Allow correct interpretation of an incorrect calculation. • The SD values mean there is more variation from the mean in the % of people with degrees in the outer suburbs (1) this is because there are more extreme values in the Outer Suburbs (1) • The SD value shows there is more clustering of % people with	2 AO3=2
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		degrees around the mean in the Inner City Area. (1) This means that the mean is more typical of the data set in the inner city (1) • The SD score of Y is higher than area X (1) this means that is more variation in area Y (1) • Max 1 if separate accounts or if only one area considered. • No credit for simply restating the SD values without any development.	
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03	4	Evaluate the usefulness of standard deviation and / or alternative techniques that could be used to analyse the data in Figure 4 AO3 – Use of analysis skills to interpret data. Evaluation of the usefulness of analysis skills to interpret data <u>Mark scheme</u> Level 3 (7–9 marks) AO3 – Detailed use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Detailed evaluation of the usefulness of these techniques. Level 2 (4–6 marks) AO3 – Clear use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Clear evaluation of the usefulness of these techniques. Level 1 (1–3 marks) AO3 – Basic use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Basic evaluation of the usefulness of these techniques. <u>Notes for answers</u> The question requires candidates to evaluate how the use of standard deviation or other techniques might be useful in interpreting data or drawing conclusions. They do not need to use standard deviation as the question states and/or. They could apply presentation techniques as long as they link to how they can be used to analyse data. AO3 • Standard deviation is useful as it allows us to consider the spread of the data around the mean, which means that in Figure 4 we can prove that there is a greater variation in the outer suburbs. • SD indicates the extent of the spread of data. So, it is very	9 AO3=9
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		useful when comparing two data sets as in Figure 4. In this case SD is an appropriate technique as we can compare the two areas. • SD is more useful than just comparing the mean as in this case the mean is much larger in the outer suburbs but this is affected by some extreme values. SD allows us to be able to show this mathematically. • A description of the alternative analysis techniques and how they would be constructed • It could be considered that you could use measures of central tendency such as the mean or median, allowing direct comparison and analysis of averages. • Range could also be used to consider basic variation in education levels across each area allowing a comparison to be made • An appropriate analysis technique would be interquartile range. This may be described with reference to calculating the median values ($X = 8.65$ and $Y = 12.1$). The usefulness may consider that it would remove extreme values so reducing the range of sizes. However there will still be a bigger variation in the outer suburb. • Although not on AS spec they may also consider Mann Whitney as an alternative appropriate technique as it compares the median value of two data sets • Presentation techniques that could be used as alternatives to analyse data for example bar graphs that plot the mean for each area so that a comparison can be made. An alternative could be to draw a scattergraph and add a line of best fit. They could consider the problems with this as there isn't really a relationship context as data is from two different locations with no distance element.	
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04	1	Two of shingle sizes are missing from the dispersion diagram in Figure 10. Plot the missing data from the table below on to Figure 10. <u>Mark Scheme</u> • 1 mark for each correct plot • Plots should be a cross. Max 1 mark if plots correct but the plot is not a cross • It is not necessary to write the value next to the plot Shingle size (mm) <table><tr><th>Location</th><th>Shingle size (mm)</th></tr><tr><td>Western end</td><td>3</td></tr><tr><td>Western end</td><td>12</td></tr><tr><td>Western end</td><td>18</td></tr><tr><td>Western end</td><td>20</td></tr><tr><td>Western end</td><td>22</td></tr><tr><td>Western end</td><td>23</td></tr><tr><td>Western end</td><td>32</td></tr><tr><td>Western end</td><td>56</td></tr><tr><td>Eastern end</td><td>3</td></tr><tr><td>Eastern end</td><td>4</td></tr><tr><td>Eastern end</td><td>8</td></tr><tr><td>Eastern end</td><td>12</td></tr><tr><td>Eastern end</td><td>14</td></tr><tr><td>Eastern end</td><td>16</td></tr><tr><td>Eastern end</td><td>18</td></tr><tr><td>Eastern end</td><td>21</td></tr><tr><td>Eastern end</td><td>25</td></tr><tr><td>Eastern end</td><td>34</td></tr><tr><td>Eastern end</td><td>38</td></tr></table>	Location	Shingle size (mm)	Western end	3	Western end	12	Western end	18	Western end	20	Western end	22	Western end	23	Western end	32	Western end	56	Eastern end	3	Eastern end	4	Eastern end	8	Eastern end	12	Eastern end	14	Eastern end	16	Eastern end	18	Eastern end	21	Eastern end	25	Eastern end	34	Eastern end	38	2 AO3=2
Location	Shingle size (mm)																																										
Western end	3																																										
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04	2	<table><tr><th>Shingle size in mm (x)</th><th>$x - \bar{x}$</th><th>$(x - \bar{x})^2$</th></tr><tr><td>23</td><td>0.50</td><td>0.25</td></tr><tr><td>56</td><td>33.50</td><td>1122.25</td></tr><tr><td>21</td><td>-1.50</td><td>2.25</td></tr><tr><td>18</td><td>-4.50</td><td>20.25</td></tr><tr><td>3</td><td>-19.50</td><td>380.25</td></tr><tr><td>17</td><td>-5.50</td><td>30.25</td></tr><tr><td>12</td><td>-10.50</td><td>110.25</td></tr><tr><td>22</td><td>-0.50</td><td>0.25</td></tr><tr><td>21</td><td>-1.50</td><td>2.25</td></tr><tr><td>32</td><td>9.50</td><td>90.25</td></tr><tr><td colspan="2">$\Sigma x = 225$</td><td rowspan="2">$\Sigma(x - \bar{x})^2 = 1758.50$</td></tr><tr><td colspan="2">$\bar{x} = 22.50$</td></tr></table>	Shingle size in mm (x)	$x - \bar{x}$	$(x - \bar{x})^2$	23	0.50	0.25	56	33.50	1122.25	21	-1.50	2.25	18	-4.50	20.25	3	-19.50	380.25	17	-5.50	30.25	12	-10.50	110.25	22	-0.50	0.25	21	-1.50	2.25	32	9.50	90.25	$\Sigma x = 225$		$\Sigma(x - \bar{x})^2 = 1758.50$	$\bar{x} = 22.50$		Key x = Individual value Σ = Sum of $\bar{x}$ = Mean σ = Standard deviation n = Number in the sample Standard deviation formula $\sigma = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n}}$	4 AO3=4
		Shingle size in mm (x)	$x - \bar{x}$	$(x - \bar{x})^2$																																						
		23	0.50	0.25																																						
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Show your working: 																																										

04	3	Use the standard deviation values to contrast the two data sets. <u>Mark scheme</u> Allow a correct interpretation of an incorrect SD value • The mean is more typical of the data set at the Eastern end of the beach than the Western end (1) as the SD value is lower (1) • The SD value means there is more variation from the mean in pebble size at the Western end (1) this is because there are more extreme values at the Western end (1) • The SD value shows there is more clustering of shingle size around the mean at the Eastern end (1) indicating that pebble sizes show less variation (1) • The SD value is higher at the Western end of the beach (1) this means there is more variation in pebble size at the Western end (1) • Max 1 if separate accounts or if only one end considered. • No credit for simply restating the SD values without any development.	2 AO3=2
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04	4	Evaluate the usefulness of standard deviation and / or alternative techniques that could be used to analyse the data in Figure 8 AO3 – Use of analysis skills to interpret data. Evaluation of the usefulness of analysis skills to interpret data <u>Mark scheme</u> Level 3 (7–9 marks) AO3 – Detailed use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Detailed evaluation of the usefulness of these techniques. Level 2 (4–6 marks) AO3 – Clear use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Clear evaluation of the usefulness of these techniques. Level 1 (1–3 marks) AO3 – Basic use of data from the enquiry which is then applied to suggest how standard deviation and / or alternative techniques aid analysis. Basic evaluation of the usefulness of these techniques. <u>Notes for answers</u> The question requires candidates to evaluate how the use of standard deviation or other techniques might be useful in interpreting data or drawing conclusions. They do not need to use standard	9 AO3=9
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		deviation as the question states and/or. They could apply presentation techniques as long as they link to how they can be used to analyse data. AO3 • Standard deviation is useful as it allows us to consider the spread of the data around the mean, which means that in Figure 8 we can prove that there is a greater spread of data at the western end of the beach • SD indicates the extent of the spread of data. So, it is very useful when comparing two data sets as in Figure 8. In this case SD is an appropriate technique as we can compare the two end of the beach. • SD is more useful than just comparing the mean as in this case the mean is larger at the western end but this is affected by some extreme values. SD allows us to be able to show this mathematically. • A description of the alternative analysis techniques and how they would be constructed • It could be considered that you could use measures of central tendency such as the mean or median, allowing direct comparison and analysis of averages. Range could also be used to consider basic variation in pebbles size. • An appropriate analysis technique would be interquartile range. This may be described with reference to calculating the median values ($W = 21$ and $E = 15$). The usefulness may consider that it would remove extreme values so reducing the range of sizes. However there will still be a bigger variation in the western end. • Although not on AS spec they may also consider Mann Whitney as an alternative appropriate technique as it compares the median value of two data sets • Presentation techniques that could be used as alternatives to analyse data for example bar graphs that plot the mean for each area so that a comparison can be made. An alternative could be to draw a scattergraph and add a line of best fit. They could consider the problems with this as there isn't really a relationship context as data is from two different locations with no distance element.	
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