

Cambridge IGCSE™

GEOGRAPHY

0460/04

Paper 4 Geographical Investigations

For examination from 2027

MARK SCHEME

Maximum Mark: 60

Specimen

This document has **14** pages.

Generic Marking Principles

All examiners must apply these general marking principles when marking candidate responses. Examiners must apply them alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme must also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptions for the question
- the specific skills defined in the mark scheme or in the generic level descriptions for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptions.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however, the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptions in mind.

Guidance on using levels-based mark schemes

Marking of work should be positive, rewarding achievement where possible, but clearly differentiating across the whole range of marks, where appropriate.

The marker should look at the work and then make a judgement about which level statement is the best fit. In practice, work does not always match one level statement precisely so a judgement may need to be made between two or more level statements.

Once a best-fit level statement has been identified, use the following guidance to decide on a specific mark:

If the candidate's work convincingly meets the level statement, award the highest mark. If the candidate's work adequately meets the level statement, award the most appropriate mark in the middle of the range (where middle marks are available). If the candidate's work just meets the level statement, award the lowest mark.

Annotations

(✓HA) or (XHA) or (^HA) for reserved hypothesis marks (see mark scheme references).

Assessment Objectives

AO1: Knowledge and understanding

AO2: Skills and analysis

AO3: Evaluation and decision-making

Table A

AO3: Evaluation and decision-making

Use this table to give marks for each candidate response for the 6 mark evaluation question item in Question 1 and Question 2.

Level	Description	Marks
3	<ul style="list-style-type: none"> • A balanced/comprehensive answer which shows a clear understanding with developed statements which are relevant to the question. • Answer is supported by relevant data/evidence throughout. • Answer contains a supported evaluation/judgement/decision on the question. 	5–6
2	<ul style="list-style-type: none"> • An answer which shows a good understanding with some developed statements which are relevant to the question. • Answer is supported by some relevant data/evidence. • Answer includes a limited evaluation/judgement/decision on the question. 	3–4
1	<ul style="list-style-type: none"> • An answer which shows limited understanding using simple statements which are relevant to the question. • Answer shows limited use of supporting data/evidence. 	1–2
0	<ul style="list-style-type: none"> • No creditable response. 	0

Question	Answer	Marks
1(a)	<p>Which of the following statements are true about longshore drift?</p> <p>Tick <u>three</u> answers.</p> <p>AO1: Knowledge and understanding</p> <ul style="list-style-type: none"> • Movement of material up and down the beach is repeated with each wave. • The prevailing wind influences the direction of longshore drift movement. • Waves approach the coastline at an angle. <p>4 selected answers (maximum 2 marks) 5 selected answers (maximum 1 mark) 6 or more selected answers (0 marks)</p> <p>3 × 1 mark</p>	3
1(b)	<p>Explain why their teacher gave the following advice about doing fieldwork safely on the beach.</p> <p>Make sure that their phone is fully charged.</p> <p>Do not go into the sea.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • would be able to communicate/call/use it if they got into difficulty/got separated/in an emergency/if needed help • dangerous currents/rough sea/danger of drowning. <p>All valid material must be credited.</p> <p>2 × 1 mark</p>	2
1(c)	<p>To investigate hypothesis 1 and 2, the students collected 10 pebbles at each of 15 sites along the beach.</p> <p>Describe how they could use a quadrat to select pebbles at each site.</p> <p>AO1 Knowledge and understanding</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • put quadrat on beach/onto ground • sample pebbles from within quadrat • use random numbers to identify squares in quadrat and pick pebbles from identified squares/pick pebbles from different squares in quadrat. <p>All valid material must be credited.</p> <p>3 × 1 mark</p>	3

Question	Answer	Marks
1(d)(i)	<p>Describe how they could use this equipment to measure the length of each pebble.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • put a pebble into ‘teeth’/prongs/gap (of callipers)/adjust callipers to hold pebble • measure length on the scale/read or look at the number on scale/measure length of the gap between ‘teeth’ with a ruler. <p>All valid material must be credited.</p> <p>2 × 1 mark</p>	2
1(d)(ii)	<p>On Figure 1.2, plot the mean (average) length of the pebbles at site 6.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • plot 6.4 cm at 600 m 	1
1(d)(iii)	<p>The students made the conclusion that <u>Hypothesis 1</u>: Pebbles become smaller from west to east along the beach was generally true.</p> <p>Give evidence from Figure 1.2 and Table 1.1 to explain their conclusion.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • 1 mark for paired data to show decrease in length e.g. site 1/0 m = 8.4 cm and site 15/1680 m = 5.1 cm OR decrease by 3.3 cm between site 1 and site 15. Credit any two sites which show a decrease. • 1 mark for identifying an anomaly to general decrease in length e.g. average length at site 8/840 m is longer than at site 7/720 m. • No credit for hypothesis conclusion. <p>2 × 1 mark</p>	2
1(e)(i)	<p>Calculate the total roundness index score for Student B’s results and write the answer on Table 1.2.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • total roundness index score = 25 	1

Question	Answer	Marks
1(e)(ii)	<p>Suggest why the two students' results of using the roundness index are different and how they could agree a total roundness index score for each site.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • index scores are subjective/compared with diagram/measured by eye/estimated • students could average their different scores OR discuss the scores which they have given. <p>All valid material must be credited.</p> <p>2 × 1 mark</p>	2
1(e)(iii)	<p>On Figure 1.4 plot the total roundness index score for site 15.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • plot site 15 = 41 on graph 	1
1(e)(iv)	<p>What conclusion should the students make about <u>Hypothesis 2: Pebbles become rounder from west to east along the beach?</u></p> <p>Justify your decision with evidence from Figure 1.4 and Table 1.1.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • Hypothesis is false/not true 1 mark reserve (✓HA). • 1 mark for statement: there is no clear pattern/trend/relationship/correlation OR total roundness index scores vary or fluctuate along beach. • 1 mark for evidence from any three sites which disproves hypothesis: e.g. site 4/360 m = 58 and site 12/1320 m = 31 and site 14/1560 m = 52. <p>Incorrect hypothesis answer of true/partially false = 0 (XHA). This conclusion is wrong, but credit any relevant evidence which supports the correct conclusion.</p> <p>If no hypothesis conclusion ^HA and credit evidence which supports the correct conclusion.</p> <p>3 × 1 mark</p>	3

Question	Answer	Marks
1(f)(i)	<p>Describe how the students could complete their bi-polar survey.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • agree what each score/description/advantage and disadvantage means • circle groynes, sea wall or rock armour on recording sheet • individual student decides the score/pair of students agree the score/rate the method • mark score on their form/tick the box to show the score • add up the total • complete recording sheet for each defence/groynes, sea wall or rock armour. <p>3 × 1 mark</p>	3
1(f)(ii)	<p>On Figure 1.7, plot the score for how well the rock armour stops wave erosion using the results from Table 1.4.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • plot +3 (for how well rock armour stops wave erosion) 	1

Question	Answer	Marks
1(f)(iii)	<p>Use Figure 1.7 and Table 1.4 to decide which coastal defence is the best.</p> <p>Use data to justify your decision.</p> <p>AO3: Evaluation and decision-making</p> <p>Use Table A to mark candidate responses to this question.</p> <p>Ideas such as:</p> <p>Decision should be based upon and supported by evidence from Figure 1.7 and Table 1.4, e.g. best coastal defence are groynes.</p> <p>Reference is made to advantages and disadvantages of each coastal defence:</p> <ul style="list-style-type: none"> • sea wall and/or rock armour protects coast from erosion the most (+3) • groynes only score +1 for coastal protection/does it stop wave erosion? • for attractiveness all score low: groynes +1, sea wall –1, rock armour –2 • for access to the beach groynes score the highest +3, whereas sea wall and rock armour both score –3 • all score low for is it safe to walk on: groynes –3, sea wall –2, rock armour –3. <p>Comparison between the positive and negative scores for the three defences:</p> <ul style="list-style-type: none"> • groynes score positively for four features and sea wall/rock armour score positively for two features • groynes: positive scores for attractiveness, access to beach, protect coast, stop wave erosion • sea wall and rock armour: positive scores for protect coast, stop wave erosion. <p>Comparison between the total scores for the three defences: e.g. only groynes have a positive score/groynes have highest score/total score for groynes = +3, for sea wall = 0, for rock armour = –3.</p> <p>Consideration of the different importance given to individual features of each defence: e.g. groynes score higher than the other methods/only positive score for attractiveness and access to beach:</p> <ul style="list-style-type: none"> • attractiveness: groynes = +1, sea wall = –1, rock armour = –2 • access to beach: groynes = +3, sea wall = –3, rock armour = –3. <p>However, groynes score lower than the other methods for protects coast and stops wave erosion:</p> <ul style="list-style-type: none"> • protects coast: groynes = +1, sea wall = +3, rock armour = +2 • stops wave erosion: groynes = +1, sea wall = +3, rock armour = +3. <p>Some evaluative comment as to which coastal defence is best with justification.</p> <p>All valid material must be credited.</p>	6

Question	Answer	Marks
2(a)(i)	<p>Define the following terms.</p> <p>AO1 Knowledge and understanding</p> <ul style="list-style-type: none"> • economic migrant – a person who travels from one country or area to another in order to improve their standard of living/for jobs/for more money. • refugee – a person who leaves their country of origin because of fear or persecution and asks for permission to stay in a different country. <p>2 × 1 mark</p>	2
2(a)(ii)	<p>Explain what is meant by push and pull factors. Do <u>not</u> give examples.</p> <p>AO1 Knowledge and understanding</p> <ul style="list-style-type: none"> • Push factors: reasons/negative factors which make/encourage people to leave/go away from an area/country/emigrate. • Pull factors: reasons/positive factors which attract/make people want to come to an area/country/immigrate. <p>2 × 1 mark</p>	2
2(b)(i)	<p>Which of the following methods would be suitable to show this data?</p> <p>Tick <u>one</u> answer.</p> <p>AO1 Knowledge and understanding</p> <ul style="list-style-type: none"> • pie graph 	1
2(b)(ii)	<p>What name given to data or information researched from the internet or another source, and <u>not</u> collected by the students themselves?</p> <p>AO1 Knowledge and understanding</p> <ul style="list-style-type: none"> • secondary (data) 	1
2(c)(i)	<p>Describe how the students could use a random sampling method to select 100 people to complete their questionnaire.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • use random number tables to generate order to ask people/pick numbers out of a hat • choose people who fit the sequence identified • ask anybody/next person/no pattern/don't consider age/sex (maximum 1 mark). <p>2 × 1 mark</p>	2

Question	Answer	Marks
2(c)(ii)	<p>Suggest why the students asked people ‘Have you moved to live in Rome from abroad?’ before beginning the questionnaire.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • to find out if they are migrants from abroad • students only want to ask people who have moved to live in Rome from abroad/make sure they are targeting the right people • no need to continue with the questionnaire if person is not a migrant/not waste person’s or student’s time • results will be unreliable/inaccurate/not valid/contain wrong information if non-migrants are included • so that answers are relevant to hypothesis. <p>2 × 1 mark</p>	2
2(c)(iii)	<p>Suggest <u>two</u> other pieces of advice the teacher could give the students about how to use the questionnaire.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • work in pairs/groups/don’t work alone • introduce yourself/explain what the questionnaire is about • be polite/respectful/thank interviewees • ask if people are willing to answer/accept if people don’t want to answer/don’t force people to answer • don’t block pavement/doorways • go to different parts of the area • choose a time when there are people around/go to the area at different times. <p>2 × 1 mark</p>	2
2(d)(i)	<p>On Figure 2.2, use the following data to plot the number of migrants born in Mali and the Philippines.</p> <p>AO2: Skills and analysis</p> <p>Draw arrows from:</p> <ul style="list-style-type: none"> • Mali = 2 • Philippines = 11 <p>NB: Correct width of arrow from named country to Rome/Italy.</p> <p>2 × 1 mark</p>	2

Question	Answer	Marks
2(d)(ii)	<p>Why is a flow line map an appropriate method to show the data from Question 1 of the questionnaire?</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • shows by arrows where/the countries migrants came from • shows by width of arrow/scale the number of people coming from each country • shows where people come from/number of people coming from each country (maximum 1 mark). <p>2 × 1 mark</p>	2
2(d)(iii)	<p>What conclusion should the students make about <u>Hypothesis 1</u>: Most international migrants who live in Rome were born in Europe?</p> <p>Support your answer with data from Table 2.1.</p> <p>AO2: Skills and analysis</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • hypothesis is true – 1 mark reserve (✓HA) • 54 migrants from Europe and 46 come from Africa, Asia and South America/other continents • 54 out of 100/54% come from Europe • if no hypothesis conclusion credit 1 mark for data. <p>Incorrect hypothesis answer of false/partially true = 0 (XHA). This conclusion is wrong, but credit any relevant evidence which supports the correct conclusion.</p> <p>If no hypothesis conclusion ^HA and credit evidence which supports the correct conclusion.</p> <p>2 × 1 mark</p>	2
2(e)(i)	<p>Use the key to plot the results for push factors on the divided bar graph in Figure 2.3.</p> <p>AO2: Skills and analysis</p> <p>Completion of divided bar graph for push factors:</p> <ul style="list-style-type: none"> • 1 mark for dividing line at 35 • 1 mark for dividing lines at 54 and 61 • 1 mark for correct shading using the key. <p>3 × 1 mark</p>	3

Question	Answer	Marks
2(e)(ii)	<p>Does the data support Hypothesis 2: Pull factors affected the decision to migrate to Rome more than push factors?</p> <p>Use evidence from Figure 2.3 and Table 2.2 to justify your decision.</p> <p>AO2: Skills and analysis</p> <ul style="list-style-type: none"> • No/Hypothesis is false – 1 mark reserve (✓HA) <p>1 mark for a statement 1 mark for data which must support a statement</p> <p>Ideas such as:</p> <ul style="list-style-type: none"> • push factors are more important/there are more answers about push factors/more migrants identify push factors total push factors = 65 and total pull factors = 35/30 more people give push factors in their answer • highest scoring factor is war or conflict which is a push factor and it equals all the pull factors highest scoring push factor/war or conflict and all pull factors = 35 • highest scoring push factor/war or conflict is more than highest scoring pull factor/employment or higher wages highest scoring push factor/war or conflict = 35 and highest scoring pull factor/employment or higher wages = 18. <p>Hypothesis is true/partially false = 0 (XHA). This conclusion is wrong, but credit any relevant evidence which supports the correct conclusion.</p> <p>If no hypothesis conclusion ^HA and credit evidence.</p> <p>3 × 1 mark</p>	3

Question	Answer	Marks
2(f)	<p>Use the data in Table 2.3 to explain to what extent was the migrants' move to Rome a success for the migrants.</p> <p>Include statistics from Table 2.3 to justify your answer.</p> <p>AO3: Evaluation and decision-making</p> <p>Use Table A to mark candidate responses to this question.</p> <p>Don't agree because:</p> <ul style="list-style-type: none"> • (many) migrants regretted their decision to move to Rome • migrants said that problems were greater than benefits, e.g. 420 answers for problems and 280 answers for benefits • the main problems identified was high cost of living which was higher scoring than the main benefit of opportunity to work, e.g. high cost of living = 92 answers and opportunity to work = 67 answers • the three main problems were all higher scoring than the main benefit, e.g. 92, 74, 69 answers compared with 67 answers • more problems were identified than benefits, e.g. 8 problems and 6 benefits. <p>Agree/partially agree it was a success because:</p> <ul style="list-style-type: none"> • migrants can get jobs (67 out of 100) • children can go to school (64 out of 100) • there is good healthcare (53 out of 100). <p>Decision should be made based on and supported by evidence in Table 2.3.</p> <p>Reference is made to benefits and problems identified in Table 2.3.</p> <p>Comparison between the number of benefits and problems in Table 2.3.</p> <p>Comparison between the number of answers identifying problems and benefits in total in Table 2.3.</p> <p>Consideration of the different importance given to individual benefits and problems identified in Table 2.3.</p> <p>Overall conclusion e.g. disagree because there are more problems identified than benefits etc.</p> <p>All valid material must be credited.</p>	6