



Cambridge IGCSE™

GEOGRAPHY

0460/43

Paper 4 Alternative to Coursework

October/November 2021

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **8** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will 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 descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors 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 descriptors.

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 descriptors in mind.

Question	Answer	Marks								
1(a)	<table border="1"> <thead> <tr> <th data-bbox="368 248 826 313">Possible risk</th> <th data-bbox="826 248 1262 313">How to reduce the risk</th> </tr> </thead> <tbody> <tr> <td data-bbox="368 313 826 445">Slipping on rocks on the river bed</td> <td data-bbox="826 313 1262 445">Wear boots / wellingtons / waders / shoes / protective footwear</td> </tr> <tr> <td data-bbox="368 445 826 544">Getting a disease or illness from the river water</td> <td data-bbox="826 445 1262 544">Wash / shower / wear gloves / sanitise / don't drink water</td> </tr> <tr> <td data-bbox="368 544 826 642">Falling into the river and getting injured</td> <td data-bbox="826 544 1262 642">Work in groups / pairs / avoid steep or slippery slopes</td> </tr> </tbody> </table>	Possible risk	How to reduce the risk	Slipping on rocks on the river bed	Wear boots / wellingtons / waders / shoes / protective footwear	Getting a disease or illness from the river water	Wash / shower / wear gloves / sanitise / don't drink water	Falling into the river and getting injured	Work in groups / pairs / avoid steep or slippery slopes	3
Possible risk	How to reduce the risk									
Slipping on rocks on the river bed	Wear boots / wellingtons / waders / shoes / protective footwear									
Getting a disease or illness from the river water	Wash / shower / wear gloves / sanitise / don't drink water									
Falling into the river and getting injured	Work in groups / pairs / avoid steep or slippery slopes									
1(b)(i)	<p>Use tape measure to measure a fixed distance / 10 metres Put poles/sticks at fixed distance / 10 metres along river (5 to 10) / at start and end of fixed distance Put float / orange in river at start of measured distance Start stopwatch or timer when float / orange is put in river Stopwatch or timer measures time it takes to travel the measured distance / stop stopwatch or timer when float reaches end of measured distance Take several times and calculate average / take readings across river channel and calculate average Record results</p> <p>OR</p> <p>Put velocity meter / propeller / flowmeter below surface of river / into the water Propeller must be facing upstream / nothing in front of propeller Read / look at digital reading or display / speed is shown on display Take several readings over time and calculate average / take readings across river channel and calculate average Record results</p>	4								
1(b)(ii)	Plot 1.6 m/sec at site 5	1								
1(c)(i)	<p>Water / river / current moves tape / fast flowing current so tape won't stay in place Difficult to lay tape on uneven / rocky bed Would be dangerous in a fast flowing river / deep river Difficult to reach bed if river is deep Tape may not be long enough / too short Water too muddy to see river bed / cannot see river bed</p> <p style="text-align: right;">2 @ 1</p>	2								
1(c)(ii)	Plot velocity = 1.2 m/sec and wetted perimeter = 7.8 m at site 4 (don't need 4)	1								

Question	Answer	Marks
1(c)(iii)	<p>Hypothesis is true – 1 mark reserve (✓HA)</p> <p>There is a positive relationship / velocity increases as wetted perimeter increases</p> <p>1 mark for paired data from two identified sites to show relationship e.g. site 1 / upstream = 0.4 m/sec velocity and 3.5 m wetted perimeter and site 5 / downstream = 1.6 m/sec velocity and 12.1 m wetted perimeter / by 1.2 m/sec over 8.6 m</p> <p>Hypothesis conclusion is incorrect / false = 0 (XHa) If no hypothesis conclusion ^HA and credit evidence</p>	3
1(d)(i)	<p>Classification is subjective / based on student judgement</p> <p>Classes of pebbles are very similar / hard to distinguish between classes / categories</p>	1
1(d)(ii)	<p>Plot pie graph for site 2</p> <p>Very angular and angular = 25%, slightly angular and slightly rounded = 40%, rounded and very rounded = 35%</p> <p>2 marks for lines at 25% and 65%, and 1 mark for shading</p>	3
1(d)(iii)	<p>Rounded and very rounded rocks (accept rounded)</p> <p>Increase from site 1 to site 5 / downstream</p> <p>Increase from site 1 to site 3, decrease to site 4, increase to site 5 / site 4 is anomaly / exception</p> <p>1 reserve mark for paired data– need site and number or percentage Either site 1 = 4 rocks / 20% and site 5 = 10 rocks / 50% (increase) Or site 3 = 10 rocks / 50% and site 4 = 6 rocks / 30%</p> <p>OR</p> <p>Very angular and angular rocks (accept angular)</p> <p>Decrease from site 1 to site 5 / downstream</p> <p>Decrease from site 1 to site 3, increase to 4, decrease to 5 / site 4 is anomaly / exception</p> <p>1 reserve mark for paired data– need site and number or percentage Either site 1 = 6 rocks / 30% and site 5 = 0 rocks / 0% (decrease) Or site 3 = 1 rock / 5% and site 4 = 3 rocks / 15%</p>	3
1(d)(iv)	<p>Pebbles crash into each other / attrition</p> <p>Pebbles crash into bed or banks / bounce along river bed / abrasion / corrosion</p> <p>Longer duration of transport / longer time to be eroded / been in river longer</p>	2

Question	Answer	Marks
1(d)(v)	<p>Other students use roundness scoring chart to check accuracy / to compare results / students discuss roundness / one student makes all judgements</p> <p>Sample / collect / look at more pebbles at each site / increase sample size</p> <p>Sample / collect pebbles from inside, middle and outside of channel / different parts of channel</p> <p style="text-align: right;">2 @ 1</p>	2
1(e)	<p>Callipers Ruler</p> <p style="text-align: right;">2 @ 1</p>	2
1(f)	<p>Must state river or valley (no reserve)</p> <p>Valley floor becomes wider / valley is wider Valley sides are (more) gently sloping Long profile / gradient becomes less steep / gentle gradient / flatter River meanders / more extreme or bigger meanders Oxbow lake in lower valley Levees in lower valley Delta in lower valley Floodplain covers lower valley floor</p> <p>River becomes larger / deeper / wider More deposition downstream River load becomes smaller in size / individual pieces become smaller / more rounded River load increases in total amount downstream Velocity / discharge increases Wetted perimeter increases</p> <p>Need comparison (except for oxbow lake, levees. Floodplain, delta)</p>	3

Question	Answer	Marks
2(a)	3.2 km	1
2(b)	Collected from other sources / collected by others / already available / not collected by self / internet / books / second-hand / not first-hand	1
2(c)(i)	Tally	1
2(c)(ii)	Get into groups / pairs / decide who surveys each site One student / one group on each side of the road / count vehicles coming in different directions Different students / different groups count different vehicles / categories / individual puts vehicles into categories One student counts vehicles and another student records Count vehicles / use clickers / tally every time a vehicles passes Stopwatch for timing 30 mins / time for 30 minutes / count for 30 minutes Synchronise start and finish times Circle road / circle time on recording sheet	4
2(c)(iii)	Being unable to tally / count accurately because a busy time / too many vehicles come at once / vehicles come too fast Timings not synchronised Students lose concentration (Specific weather problem) – rainfall / sunstroke / too hot / snowing Breathing difficulties / exhaust or vehicle fumes Which category to include some vehicles, e.g. motor bike / some vehicles don't fit into categories	3 3 @ 1
2(d)(i)	Plot 76 at 16.30 and 30 at 19.30	2 2 @ 1
2(d)(ii)	Flow lines on a map	1
2(d)(iii)	Hypothesis is true – 1 mark reserve (✓HA) Amount of traffic has decreased / larger before by-pass / larger in 2016 Credit 1 mark for paired data from same time of day in 2016 and 2018 e.g. at 07.30 – 08.00 190 vehicles in 2016 / before by-pass and 67 vehicles in 2018 / after by-pass e.g. total in 2016 / before by-pass = 785 vehicles and in 2018 / after by-pass = 291 / 494 less in 2018 Ignore vehicle categories Hypothesis conclusion is false / partially true = 0 (XHa) If no hypothesis conclusion ^HA and credit evidence	3

Question	Answer	Marks
2(f)	<p>Advantages</p> <p>Less congestion / less hold -up / quicker journey</p> <p>Less noise / vibration in village</p> <p>Less air pollution / less breathing problems in village</p> <p>Less danger from traffic in the village</p> <p>Less accidents in village</p> <p>Jobs for construction workers (on by-pass)</p> <p>Landowners compensated for losing land</p> <p>Disadvantages</p> <p>Loss of passing trade in village / shops lose business / income</p> <p>Farmers' land taken to build by-pass</p> <p>More disturbance / noise in countryside / for people living next to by-pass</p> <p>Eyesore for people living near by-pass</p> <p>More fumes along by-pass / for people living next to by-pass</p> <p>Noise / disturbance / visual pollution / roads blocked off during construction</p> <p>Loss of amenity value / land for leisure use taken away</p> <p>Reserve 1 mark for advantages / disadvantages</p>	4