

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0460 GEOGRAPHY	
0460/41	Paper 4 (Alternative to Coursework), maximum raw mark 60

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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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- 1 (a) (i) Factors such as:
 Safety
 Width / depth / amount of water – not too wide / not too deep / variable widths
 Accessibility / private land / environmentally sensitive areas
 Distance between sites / equidistant from other sites / evenly spaced / not too close together
 Away from human impact / polluted water 3 @ 1 [3]
- (ii) Agree methodology on what measurements to take faults in methodology / how to improve methodology
 Practise fieldwork techniques / know what to do
 Test equipment 2 @ 1 [2]
- (b) Width of channel:
 Equipment: tape measure
- Stretch tape measure across river / from bank to bank /
 One side of river to the other (1 + 1)
- Depth of river:
 Equipment: ruler / metre stick / measuring stick / metre rule (1 + 1)
- 1 mark for equipment & 1 mark for method for both measurements [4]
- (c) (i) Completion of cross-section:
 2 accurate plots + line = 2 marks
 2 accurate plots but no line = 1 mark
 1 accurate plot + line = 1 mark
 Ignore shading and line to 0 [2]
- (ii) Use a tape measure / rope / chain
 Work across river bed from water level on one side to water level on other side
 Keep tape in contact with bed / channel
 OR
 Measure wetted perimeter line on cross-section
 Use scale [2]

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- (iii) Gradient / steepness of slope / angle of slope
 Volume of water / discharge / tributary joins
 Straight / presence of meanders
 Amount of rainfall / snowmelt
 Interference by people, e.g. dam / weir
 Bed roughness / rocks in river / plants in river
 2 @ 1 [2]
- (iv) Hypothesis is generally / partially true / true / Yes / do increase downstream ✓HA
 But not true for width / only true for wetted perimeter & depth
 Site 5 is an anomaly in width / site 4 is wider than site 5 / site 5 is narrower than site 4
 Credit paired data to 2 max.
 Need 2 sites + 2 measurements
 e.g. depth at site 1 is 0.04(m) & at site 5 is 0.27(m)
 w.p at site 1 is 1.75 & at site 2 is 6.3
 Width at site 4 is 10.6 & at site 5 is 9.9
 If false = 0 [4]
- (d) (i) Rock size: use ruler to measure long axis / length / width / height of rock
 Roundness: compare rock with chart (1 + 1) [2]
- (ii) Plotting two bars on graph
 Size = 22.5, roundness = 2.1
 Ignore shading 2 @ 1 [2]
- (iii) Hypothesis 2 is correct rocks do become ... [1]
- (iv) Attrition / pebbles crash into each other
 Corrasion / pebbles crash into bed and banks
 Smaller / rounder pebbles are moved further downstream because they are easier to transport
 Longer duration of transport [2]
- (e) Measure depth at more points across channel / smaller intervals
 Measure at more sites / smaller intervals
 Repeat during different day / month / season
 Sample more rocks at each site
 Different sampling techniques rather than random
 Get rocks from underneath surface of bed
 More students use Roundness Scoring chart to check results
 Measure volume / weight of rocks 4 @ 1 [4]

[Total: 30]

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- 2 (a) (i) Tertiary
- (ii) Completion of pie chart – service industries & mining
1 mark for shading, 1 mark for correct position of line
- (b) (i) Systematic sampling
Ask every tenth person
Avoid bias / fair test / equal chance for everybody
- OR
Random sampling
Use random numbers / ask next person they meet / no order
- OR:
Stratified
Ask appropriate age / gender balance
Avoids bias / fair test / more representative
- Credit 3 answers separately 3 @ 1 [3]
- (ii) Students only want to ask residents or locals / not ask visitors / students want to know if someone is a resident or live there
Residents or locals will know about the mine / visitors won't know about mine
Not waste people's time [2]
- (iii) Completion of bar graphs – town has more services = 25
dust in the air = 17 2 @ 1 [2]
- (iv) Hypothesis is false – 1 mark reserve
Mine has a positive impact
Most / almost all / over half / majority of people say mining is good
- Reference to named benefits from mining, with supporting data to
1 mark max e.g. 40 said there are jobs at the mine [4]

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- (v) Divert mining lorries around town
 Construction of railway to mine
 More buses for workers
 More roads / wider roads / by-pass road
 Limit times of blasting
 Sound-proof building / double glazing
 Drilling / digging for rock / mining underground
 Announce when blasting is happening
 Noise barriers
 Wear ear muffs
 Dust controlled by water sprays
 Wears masks 3 @ 1 [3]
- (c) (i) Completion of lines on flow line map
 Orapa = 5, Francistown = 1
 Needs to be same width along all arrow 2 @ 1 [2]
- (ii) 1 max per idea below
- Grouping:** Clustered / grouped / widespread / scattered
- Direction:** Comment e.g. towns are mainly in south of country / towns are NE of mine / none from north Botswana
- Distance:** Comment e.g. close to mine / different distances from mine
- All in **Botswana** / none from other countries / none from Zimbabwe / many close to borders
- Data:** e.g. 8 towns in NE, all within 500km of mine 3 @ 1 [3]
- (iii) Show **direction** of movement
 Shows **number** of people / how many there are
 Easy to interpret / clear picture / can easily see pattern [2]
- (iv) Working in a mine is better paid than jobs in my home town
 Send money to my family back home
 There are no jobs in my home town
- If make 4 choices deduct one mark 3 @ 1 [3]
- (d) Must leave their family / work away from their family / away from home
 Poor working conditions / long working hours / dirty job / hot in mine
 Dangerous work / mine collapse
 Dust causing health problems / breathing difficulties
 Noise causes hearing problems
 Vibrations cause 'shakes'
 Boring work / lifestyle
 Low wages / poorly paid / exploitation
 Heavy / manual work 3 @ 1 [3]

[Total: 30]