

**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 [1]
- (ii) Completion of pie chart – service industries & mining  
1 mark for shading, 1 mark for correct position of line [2]
- (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]