CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0460 GEOGRAPHY

0460/43 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.

1 (a) (i) Go to 2 sites on each road/opposite sides of road
Split into groups/pairs
Organise tasks within group
Which points on the roads to do the survey
Which day/when to do the survey
What equipment they would need – stopwatch/clock/counters/clickers
Synchronising timing/start & finish at same time
Agree vehicle categories
Information to include on recording sheet/put location or date
Method – tally count/automatic counters [4]

(ii) Being unable to count accurately at busy times/lots of traffic/traffic going too fast/too many lanes to count.
Students losing concentration/bored/no break
Breathing difficulties/breathing exhaust fumes
Timings is hard to synchronise
Specific weather difficulty – e.g. rain ruins paper/sunstroke
Keep returning to do count/meet at different times (3 @ 1) [3]

(b) (i) 158 [1]

(ii) Completion of divided bar graph – van/minibus to 140 & lorry/bus to 158 for 1 mark each.
Don't need V & L [2]

(iii) Pie Chart [1]

(iv) Hypothesis is true – 1 mark reserve
Total number of vehicles decreases during day
Bikes also decreases during day
Cars/vans/lorries slightly increase then decrease/decrease overall
Paired data to show changes to 2 mark max – need 2 times of day & figures
e.g. at 08.00 total was 160 & at 14.00 total was 126
e.g. at 08.00 there were 8 bikes and 2 bikes at 17.00 [4]

(v) Number: less vehicles at site 7/more at site 3
Type: more lorries/vans/less cars at site 7
Need comparison (2 @ 1) [2]

(c) (i) Bike = 3, Lorry = 54 (2 @ 1) [2]

(ii) Completion of line graph: 14.00–15.00 = 1120, 17.00–18.00 = 1400
Both points plotted accurately + line = 2 marks
Both points plotted accurately but no line = 1 mark **OR**
1 point plotted accurately + line = 1 mark [2]

(iii) Hypothesis 2 is incorrect – 1 mark reserve
Congestion only occurs at sites 1, 4, 5, & 6 (accept any 3)
No congestion occurs at sites 2, 3, 7 & 8 (accept any 1)
Credit data to 2 marks max – need time and site and reference to congestion level
e.g. at 08.00 at site 2 traffic = 1300 which is below congestion level
e.g. at 08.00 at site 6 traffic = 590 which is above congestion level [4]

(d) Increase in traffic/cars/vans/lorries
Increase/cause congestion (2 @ 1) [2]

(e) Widen roads/more lanes/more roads/better roads
By-pass/ring road/underpass/flyover/bridge/tunnel/elevated road
Park and ride
Bus lanes/bike lanes
Car sharing
More public transport or example
Parking restrictions/more parking spaces
One way streets
Restrict traffic to certain days/license plate policy
Congestion charge (3@1) [3]

[Total: 30]

2 **(a)** Don't do fieldwork if river is in flood/strong current
Check depth/don't go in deep water
Wear shoes/wellingtons
Don't do fieldwork alone – at least two preferably three people per group
Wear waterproofs/warm clothing/appropriate clothing/gloves/hats
Keep a look out for dangerous animals/mosquito spray
Don't do fieldwork if river is badly polluted
Tell someone where you are going/take a mobile phone
Beware of slippery rocks
Wear sunblock (2 @ 1) [2]

(b) **(i)** Ranging poles/poles
Tape measure/metre rule
Float/orange/dog biscuit/a floating object
Stopwatch/watch/clock (3 @ 1) [3]

(ii) Average length of time = 56.4 (secs)
Distance / Time = 10 (m) / 56.4 (secs) or calculated figure
=0.18 m / sec/0.177 [3]

(iii) Measurements taken at different times/different flow conditions
Floats got stuck/obstacles blocking floats
Student error/timing error/measuring error
Measurements taken at different points across river/inside or outside
Use of different types of float (2 @ 1) [2]

(iv) Two <u>vertical</u> surveying poles
<u>Distance</u> apart/at least 5 m apart
Line up clinometer between <u>same points</u> on the poles
Measuring <u>angle</u> [3]

(v) Hypothesis is incorrect – 1 mark reserve
Steeper gradient = lower velocity/gentler gradient = higher velocity
Use of paired data from 2 sites – to 1 mark max
e.g. at site 1 gradient = 8 degrees & velocity = 0.29, at site 2 gradient = 6 degrees & velocity = 0.43 [3]

(c) (i) Tape/rope & tape
Pole (2 @ 1) [2]

(ii) Completion of cross-section 2.5 m = 0.30 m = 1 mark
Completion of line = 1 mark [2]

(iii) Completion of scatter graph 3.5 m – 0.29 m/s
Don't need point 1 [1]

(iv) Hypothesis 2 is correct/partially correct – 1 mark reserve
Anomaly at site 2 or 3
Use of paired data from 2 sites – to 1 mark max
e.g. site 1 w.p. = 3.5 & velocity = 0.29 & at site 5 w.p. = 12.1 and velocity = 0.47
Credit data to show anomaly [3]

(v) Too deep to reach the bed/cannot reach river bed
Tape may not be long enough
Current may move tape/pull tape downstream/lift it from bed
Dangerous because too deep/fast flowing (2 @ 1) [2]

(d) Impact
e.g. People pollute the river with waste water from a factory
People throw household rubbish into the river – 1 mark reserve

Investigation
Decide how many sites to investigate and where
Devise a data collection sheet to record results of visual survey
Test acidity of water/use pH paper
Test clarity/colour of water see if can see through water
Survey water life, using a species indicator (Biotic Index)
Measure water temperature
Sampling technique
Sites before & after pollutant
Compare results at different sites
Survey types of litter
Survey people about change

Other possible investigations into human impact on flow:
Bank strengthening reduces bank erosion
Weir or dam construction decreases flow
Channel straightening or dredging increases velocity [4]

[Total: 30]