

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**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 must be read in conjunction with the question papers and the report on the examination.

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- 1 (a) (i) Check the depth of water / do not work if river is in flood / storm  
 Check current / velocity of river / do not work if river is fast-flowing  
 Work in pairs / groups of three / do not work alone  
 Let people know where you are going / take mobile phone  
 Wear waterproof clothing / wellingtons / protective clothing / shoes / sunblock  
 Look out for dangerous animals  
 Do not do fieldwork if river is polluted / Weil's disease / water bottle  
 Work in daylight / not in dark  
 Beware of slippery rocks / sharp stones 3 @ 1 [3]
- (ii) Agree methodology on what measurements to take  
 Practise fieldwork techniques  
 Test equipment  
 Make sure it is worth doing investigation / get to know the river / dangers 2 @ 1 [2]
- (b) Width of channel:  
 Equipment: ranging poles / tape measure  
 Stretch tape measure across river / lay pole across river (1+1)
- Depth of river:  
 Equipment: ruler / measuring stick / pebble and string  
 Rest ruler on river bed / take reading at surface / wetted length of string or pole (1+1)  
 1 mark for equipment and 1 mark for method for both measurements [4]
- (c) (i) Completion of cross section  
 Plot 0.33 deep at 1.5; 0.2 deep at 2.0  
 1 mark for both plots, 1 mark for cross section line  
 Shade in river channel = 1 mark [3]
- (ii) 6.7–6.9 metres = 2 marks  
 6.6–6.69, 6.91–7.0 metres = 1 mark [2]
- (iii) How: slows down flow / speed of river  
 Why: bed & banks create friction with moving water / rock obstacles in water (1+1) [2]
- (iv) All measurements increase downstream from A to B to C  
 1 mark for use of comparable data (need unit) [2]

	A	B	C
Width (m)	1.3	2.3	6.5
Depth (m)	0.15	0.33	0.51
Wetted perimeter (m)	1.4	2.5	6.8 or measurement from (ii)

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- (d) (i) Pebble size: measure long axis / length of pebble  
 Roundness: estimates roundness of pebble by comparing with chart (1+)
- (ii) Plots on Fig. 4 (Size: 9; Roundness: 3.5) 2 @ 1
- (iii) Hypothesis 2 is correct – there is a relationship between size & roundness of pebbles – reserve  
 As pebble size decreases roundness score increases or vice versa / it is a negative correlation (relationship) [2]
- (iv) Water becomes more powerful  
 More attrition / erosion / pebbles crash into each other  
 Pebbles crash into bed and banks / abrasion  
 Smaller / rounder pebbles are moved further downstream because they are easier to transport  
 Longer duration of transport so more attrition / erosion takes place [2]
- (e) Repeat measurements to check accuracy  
 Repeat during different day / month / season to compare results  
 Sample more pebbles at each site  
 Different sampling techniques rather than random  
 More students use Roundness Scoring chart and compare results  
 More sites along river  
 More depth points across river  
 Investigation on another river  
 Investigate volume or weight 4 @ 1 [4]

[Total: 30]

- 2 (a) (i) Where / which roads to do the survey  
 Location of survey points / safe place / away from traffic lights  
 Measure distance from town centre  
 Which day / when to do the survey  
 What time(s) to do the survey  
 How long to record / count  
 How many surveys to do in one day  
 How to organise themselves – e.g. one student on each side of the road / number of students in each group / assigning students to sites  
 What equipment they would need – stopwatch, counters, clipboard, paper for recording  
 Synchronise timing  
 Classification of traffic / what is traffic  
 How to count and record / tally method  
 Prepare tally chart 4 @ 1 [4]
- (ii) Easy / quick method to do  
 Allows accurate totalling after 2 @ 1 [2]

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- (b) (i)** Cambridge (Road)
- (ii)** Two bars drawn on Fig. 5, shading not required  
 Site 6: 100 vehicles (1 cm)  
 Site 8: 320 vehicles (3.2 cm) 2 @ 1 [2]
- (iii)** Hypothesis 1 is incorrect / false / partially true – reserve  
 No clear pattern on the four roads  
 Two roads show less traffic further away from centre / Queens Rd. / Robertson Dr.  
 Two roads show more traffic further away from centre / Wellington Dr. / Cambridge Rd.  
 But difference in amount of traffic variation is small on all roads  
 Amount of traffic varies between roads not distance from centre  
 Credit paired data for same road to 1 mark max – reserve [4]
- (c) (i)** Less data to work with so easier to use  
 Both sites along each road have similar results  
 Take too long to do all 8 sites [1]
- (ii)** Flow lines drawn on map – mark width of arrow base  
 Towards town centre: 90 vehicles (0.9 cm)  
 Away from town centre: 45 vehicles (0.45 cm) 2 @ 1 mark [2]
- (iii)** Queens Road  
 Robertson Drive  
 Wellington Drive  
 Must have road / drive [1]
- (iv)** Hypothesis 2 is correct / the amount of traffic going towards and going away from the town centre will change – reserve  
 More traffic / wider arrows going towards centre at 08.00 / morning  
 More traffic / wider arrows going away from centre at 17.00 / evening  
 Each road has the same pattern of movement  
 Credit paired data for am & pm for any 1 road to 1 mark max – reserve [4]
- (d)** Surveys done more frequently during the day  
 More survey points to give greater coverage / survey more roads  
 Surveys done on different days  
 Comparison with survey done on a non-work day such as weekend  
 More students / groups doing survey to minimise tallying errors / to check results  
 Use counters / stopwatch  
 Classification of types of traffic 3 @ 1 [3]
- (e)** There will be more traffic / many cars / lots of cars / many people  
 Why: in summer / one part of the year / weekend / evening / morning / holiday time / hotter / sunny  
 Activity on beach  
 Accept reverse reasoning if answer is 'less traffic / less people' [2]

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- (f) (i) Hypothesis such as:  
Traffic-free zone has improved the town centre  
Traffic-free zone causes problems for shop owners  
Traffic-free zone attracts more shoppers to the town centre  
There is less congestion in the town centre now there is traffic – free zone  
The town centre is less polluted  
It's safer to shop in the town centre [1]

- (ii) Questions such as:  
How often do you shop in the town centre?  
Do you think a traffic-free zone is a good idea?  
What is one advantage of the traffic-free zone for you?  
What is one disadvantage of the traffic-free zone for you?  
Questions must be relevant to hypothesis in **f (i)**  
If no hypothesis / inappropriate hypothesis in **f (i)** credit to 2 marks max for questions which are broadly relevant to an investigation on a traffic-free zone 3 @ 1 [3]

[Total: 30]