



# Cambridge IGCSE™

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## GEOGRAPHY

0460/42

Paper 4 Alternative to Coursework

October/November 2024

INSERT

1 hour 30 minutes

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### INFORMATION

- This insert contains additional resources referred to in the questions.
- You may annotate this insert and use the blank spaces for planning. **Do not write your answers** on the insert.



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This document has **12** pages. Any blank pages are indicated.

Table 1.1 for Question 1

## Results of traffic count

| fieldwork site number | distance from CBD (km) | number of vehicles counted in 10 mins |
|-----------------------|------------------------|---------------------------------------|
| 1                     | 0.5                    | 409                                   |
| 2                     | 1.5                    | 425                                   |
| 3                     | 2                      | 376                                   |
| 4                     | <b>3.5</b>             | <b>310</b>                            |
| 5                     | 4.5                    | 616                                   |
| 6                     | 5                      | 200                                   |
| 7                     | 6                      | 243                                   |
| 8                     | 6.5                    | 74                                    |
| 9                     | 7.5                    | 18                                    |

Fig. 1.2 for Question 1

**Air Quality Index**

| <b>Air Quality Index value</b> | <b>level of health concern</b> | <b>colour</b> | <b>advice</b>                                                                                                                                                                |
|--------------------------------|--------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 to 50                        | good                           | green         | None                                                                                                                                                                         |
| 51 to 100                      | moderate                       | yellow        | Very sensitive people should reduce prolonged outdoor exercise.                                                                                                              |
| 101 to 150                     | unhealthy for sensitive groups | orange        | Children, active adults and people with respiratory diseases such as asthma should reduce prolonged outdoor exercise.                                                        |
| 151 to 200                     | unhealthy                      | red           | Children, active adults and people with respiratory diseases such as asthma should avoid prolonged outdoor exercise. Everyone else should reduce prolonged outdoor exercise. |
| 201 to 300                     | very unhealthy                 | purple        | Children, active adults and people with respiratory diseases such as asthma should avoid physical activity outdoors. Everyone else should avoid prolonged outdoor exercise.  |
| 301 to 500                     | hazardous                      | maroon        | Everyone should avoid physical activity outdoors.                                                                                                                            |

Fig. 1.3 for Question 1

Equipment used to measure the Air Quality Index



Table 1.2 for Question 1

## Amount of traffic and Air Quality Index

| fieldwork site number | number of vehicles counted in 10 minutes | Air Quality Index value |
|-----------------------|------------------------------------------|-------------------------|
| 1                     | 409                                      | 135                     |
| 2                     | 425                                      | 152                     |
| 3                     | 376                                      | 132                     |
| 4                     | 310                                      | 120                     |
| 5                     | 616                                      | 195                     |
| 6                     | <b>200</b>                               | <b>105</b>              |
| 7                     | <b>243</b>                               | <b>120</b>              |
| 8                     | 74                                       | 86                      |
| 9                     | 18                                       | 57                      |

Fig. 1.5 for Question 1

## Student's bipolar survey sheet

|                                                   |       |    |   |    |    |                                  |
|---------------------------------------------------|-------|----|---|----|----|----------------------------------|
| fieldwork site number _____ date _____ time _____ |       |    |   |    |    |                                  |
|                                                   | score |    |   |    |    |                                  |
| negative description                              | -2    | -1 | 0 | +1 | +2 | positive description             |
| dirty with lots of litter                         |       |    |   |    |    | clean with no litter             |
| poor-quality housing                              |       |    |   |    |    | high-quality housing             |
| unattractive and derelict                         |       |    |   |    |    | attractive and well looked after |
| poor-quality roads and pavement                   |       |    |   |    |    | good-quality roads and pavement  |
| many pedestrians                                  |       |    |   |    |    | few pedestrians                  |
| little open or green space                        |       |    |   |    |    | plenty of open or green space    |
| much noise from traffic                           |       |    |   |    |    | little noise from traffic        |
| total score =                                     |       |    |   |    |    |                                  |

Fig. 2.1 for Question 2

## Measuring infiltration

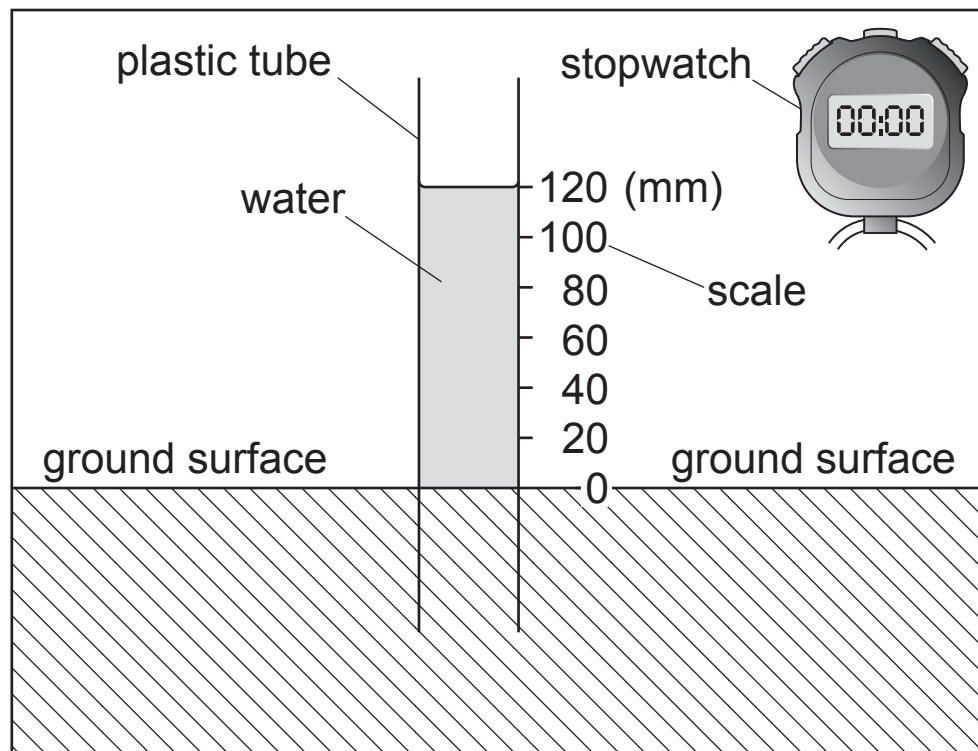


Table 2.1 for Question 2

**Results of students' measurements of water level**

| time (mins) | water level in tube (mm) |           |
|-------------|--------------------------|-----------|
|             | site 1                   | site 4    |
| 0           | 120                      | 120       |
| 1           | 120                      | 115       |
| 2           | 119                      | 111       |
| 3           | 118                      | 111       |
| 4           | 118                      | 91        |
| 5           | 116                      | 75        |
| 6           | 115                      | 51        |
| 7           | 113                      | 28        |
| 8           | 110                      | <b>13</b> |
| 9           | 108                      | <b>9</b>  |
| 10          | 105                      | <b>6</b>  |

**Fig. 2.3 for Question 2****How to measure soil moisture content****Method 1**

1. Take a sample of soil from each site.
2. Put each soil sample into separate plastic bags, and label the bag with the site number.
3. Take the soil samples back to school.
4. Empty each soil sample into a small dish, and weigh it to find out the weight of each sample.
5. Put the soil samples into an oven, and heat them at 250 °C for 30 minutes.
6. Take the soil samples from the oven, and weigh them again.
7. Calculate the soil moisture percentage by using the formula:

$$\frac{\text{original weight when wet} - \text{weight after being heated and dried}}{\text{original weight when wet}} \times 100$$

**Method 2**

1. Switch on the digital soil moisture meter.
2. Put the sensor probe into the soil to a depth of about 10 cm.
3. Read the percentage display on the meter.



Table 2.2 for Question 2

## Infiltration rate and soil moisture content

| site | infiltration rate<br>(mm per min) | soil moisture<br>content (%) |
|------|-----------------------------------|------------------------------|
| 1    | 1.5                               | 37.3                         |
| 2    | 1.6                               | 34.8                         |
| 3    | <b>5.1</b>                        | <b>31.5</b>                  |
| 4    | 11.4                              | 27.7                         |
| 5    | 13.3                              | 24.9                         |
| 6    | 17.1                              | 22.4                         |

Table 2.3 for Question 2

## Gradient and infiltration results

| site | slope gradient<br>(°) | infiltration rate<br>(mm per min) |
|------|-----------------------|-----------------------------------|
| 1    | 9                     | 1.5                               |
| 2    | 4                     | 1.6                               |
| 3    | <b>3</b>              | <b>5.1</b>                        |
| 4    | 6                     | 11.4                              |
| 5    | 2                     | 13.3                              |
| 6    | 7                     | 17.1                              |

Fig. 2.6 for Question 2

## Vegetation at each fieldwork site

|                                   | site 1                   | site 2                    | site 3 | site 4                   | site 5                        | site 6                |
|-----------------------------------|--------------------------|---------------------------|--------|--------------------------|-------------------------------|-----------------------|
| infiltration rate<br>(mm per min) | 1.5                      | 1.6                       | 5.1    | 11.4                     | 13.3                          | 17.1                  |
| types of<br>vegetation            | scrub grass<br>bare soil | patchy grass<br>bare soil | grass  | grass<br>isolated bushes | dense grass<br>isolated trees | dense grass<br>bushes |





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