



21st International Geography Olympiad

Bangkok, Thailand

26 July – 1 August 2025

WRITTEN RESPONSE TEST

Question and Answer Booklet

Name: Team:

Student number

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Do NOT open the Booklet before instructed to do so by a supervisor.

Instructions for Students

1. Fill in your name, team and iGeo student number on the front page of this “Question and Answer” Booklet.
2. Fill in your iGeo student number in the boxes at the top of each page of this Booklet.
3. This test consists of 6 sections.
4. The maximum possible score for the WRT is 90 marks.
The number of marks for each question are given in the margin at the beginning of the question.
There is a maximum of 15 marks for each section.
5. Answer all questions in the spaces provided in this Booklet. All answers are to be written in English.
Keep the left margin free for markers.
Please write clearly.
Please use blue or black pen. Do NOT use pencil.
6. Check the back of each page as questions are printed on both sides of a page.
7. There are blank pages which you can use as additional space for your notes.
Please cross through any notes that are not part of your answers.
If you use these pages for answers, you MUST label them clearly with the Section and Question number (e.g. A1).
8. Where appropriate, please write in full sentences or phrases, not single words.
9. Give only the required number of points in your answers.
For instance, if the question asks for 2 reasons or examples and you give more than 2, only the first 2 reasons will be marked.
10. The Resource Booklet contains Figures referred to in this Booklet.
Do not write any of your answers in Resource Booklet.
11. You may use a simple calculator during the test. It must be approved by the supervisors before the test begins.
12. Students not educated in English are allowed to use bilingual dictionaries during the test.
Students must ensure that their bilingual dictionaries have been approved and do not contain unauthorized material such as study notes, maps, diagrams and named examples of places.
13. Time:
180 minutes for students not educated in English (+10 minutes reading time),
150 minutes for students educated in English (+10 minutes reading time).

Good luck!

Written Response Test

Contributions from: Bulgaria, Canada, Denmark, Hungary, Poland and Singapore
Committee Convenor: Ivan Sulc (Croatia)
Director of Tests: Paul VanZant (Canada)

Section A: Landslides

Resource Booklet Figure A1 represents a diagram of anticlines and synclines.
Resource Booklet Figure A2 shows the remnants of a landslide that took place in La Conchita, California, USA (January 2005). Ten people were killed.

1 m

1. Name **two natural forces** that can trigger landslides.

Natural force 1:

Natural force 2:

2 m

2. Identify and explain **two specific human activities** that may contribute to landslides.

Activity 1:.....

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Activity 2:.....

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0.5 m

3. **For this question, refer to Resource Booklet: Figure A1.**
- a) Specify the location on the diagram **most susceptible** to landslide activity (A, B, C or D).

Location:.....

1 m

- b) Explain the reason for the location selected above (in 3a).

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4. For this question, refer to Resource Booklet: Figure A2.

2 m

- a) Clearly label the **parts of a landslide** on Figure A2 below, using the following letters as labels:
A: head, B: foot, C: surface of rupture, D: scarp surface.



Figure A2: Remnants of a landslide that took place in La Conchita, California, USA (January 2005). Ten people were killed.

(https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/styles/full_width/public/LaConchita_USGS_Photo.jpg?itok=NS7eb4YQ)

2 m

- b) Identify specific evidence from Figure A2 that indicates a previous landslide took place in the area.

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4 m

- c) Suggest two actions that can be taken to **protect** the neighbourhood from future landslides and **evaluate the effectiveness** of each measure that you provide.

Action 1:

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Effectiveness of Action 1:

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Action 2:

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Effectiveness of Action 2:

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5. After wildfires occur in mountainous areas, there is an increased danger of landslides occurring.

- 0.5 m a) Name the **season** when post wildfire landslides are most likely to occur.

Season:

- 2 m b) Explain why landslides are more likely to occur during the season you selected.

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You can use it for your notes, but please cross them through afterwards.

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Section B: Waves and coastline

Resource Booklet Figure B1 shows a fictional coastline.

1. Explain the **energy relationship** between wind and the formation of waves.

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2. Describe four ways **waves change** as they move from deeper water towards the shore.

Change 1:

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Change 2:

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Change 3:

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Change 4:

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2 m

3. Analyse Figure B1. Draw lines representing the **path of the waves** as they move towards the coast. Assume that the waves hit the coast from the north-east and have a wavelength of 14 m. Consider changes to the waves that may occur as they move towards the coast.

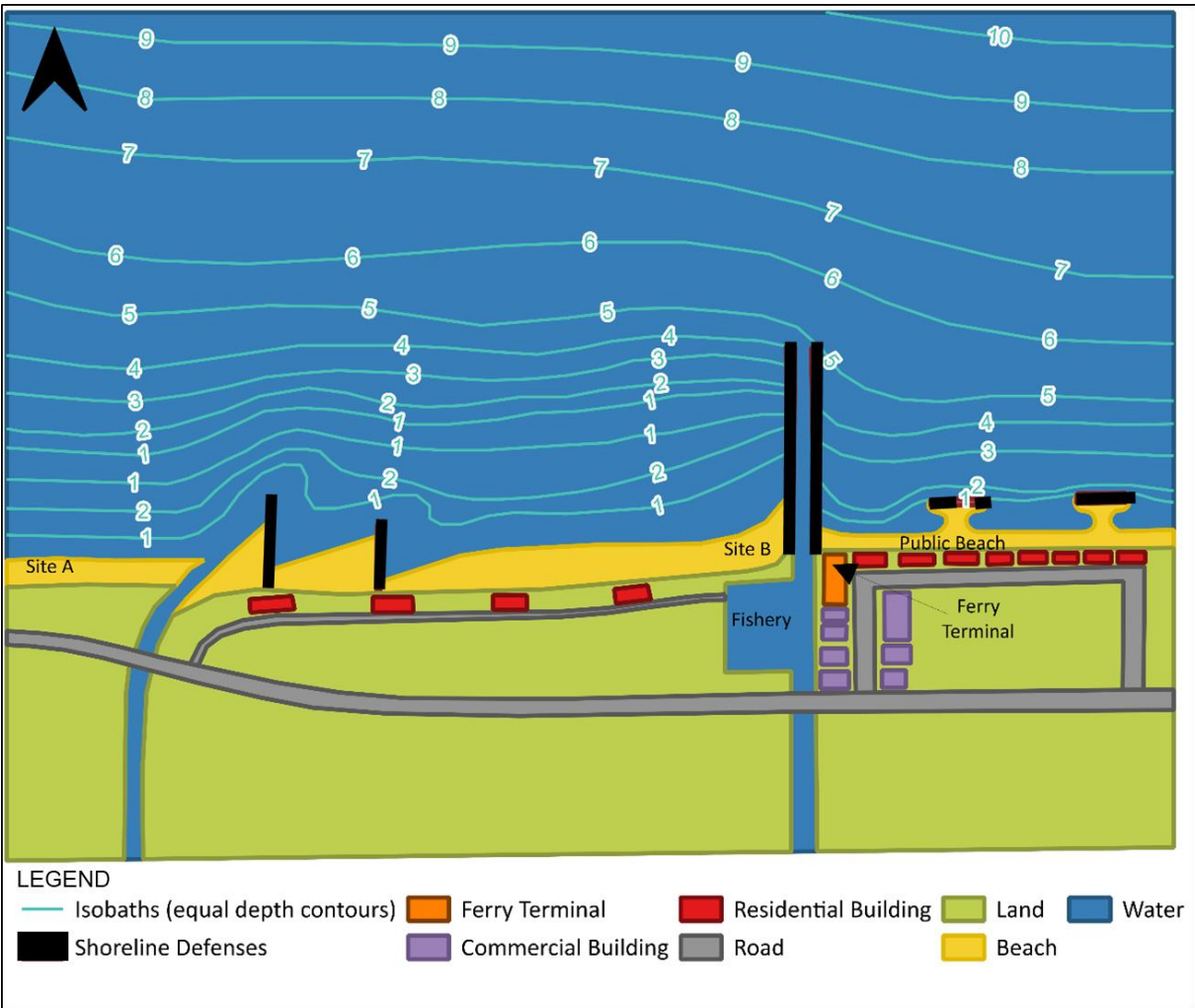


Figure B1: A fictional coastline. The underwater topography (bathymetry) of the area is represented by **isobaths or depth contours** with an interval of 1 metre. This area is microtidal with a maximum tidal range of 2 metres and is located at a latitude of 50°N. This coastal area includes a public beach with over 50,000 visitors per summer, a fishery, a ferry terminal and several residential properties.
(Created by B. Woodward)

4. For this question, refer to Figure B1.

1 m

a) Draw an **arrow** on the Figure B1 to identify the direction of the longshore current.

1 m

b) Justify the **reason** for the direction of the arrow you drew in 4a).

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5 m

5. Use your answers from the previous questions to develop a **strategy for shoreline management** in this area.

Consider the way in which the various changes will affect the coastline and identify areas where you anticipate erosion and/or sedimentation in the future. You have unlimited resources, so you can build any type of coastal defence and change the land use patterns so long as your suggestions are realistic.

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You can use it for your notes, but please cross them through afterwards.

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Section C: Water stress

Resource Booklet Figure C1 shows the current water stress by country – freshwater withdrawal as a proportion of available freshwater resources.

Resource Booklet Figure C2 shows the projected water stress in 2050 (ratio of human water demand to water availability).

- 3 m 1. For this question, refer to Resource Booklet: Figure C1.

Describe the current **spatial distribution** of water scarcity in the world.

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- 3 m 2. Identify and explain three **main causes** of high water stress.

Cause 1:

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Cause 2:

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Cause 3:

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3 m 3. Describe three **socio-economic impacts** of water scarcity.

Impact 1:

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Impact 2:

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Impact 3:

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3 m 4. **For this question, refer to Study Resource Booklet: Figure C2.**

Explain why the countries of the **northern Mediterranean** are likely to experience major water stress in the future.

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3 m 5. Outline three **strategies** for reducing water stress. The strategies must be related to real-world situations.

Strategy 1:

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Strategy 2:

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Strategy 3:

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Section D: Global energy consumption

Resource Booklet Figure D1 shows the structure of world energy consumption by source from 1965 to 2018.

Resource Booklet Figure D2 represents world coal consumption in selected countries and regions from 1978 to 2020.

Resource Booklet Figure D3 shows the electricity consumption in selected countries and regions in 1990, 2000, 2015 and 2025.

Resource Booklet Figure D4 gives the projected global primary energy consumption by region until 2050, made in 2010.

2 m

1. Explain the difference between **renewable** and **sustainable** energy sources. Use specific examples of energy sources in your explanation.

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3 m

2. **For this question, refer to Resource Booklet: Figures D1.**

Describe the main trends in the global consumption of **oil**, **coal** and **renewable energy** from 1965 to 2018.

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3 m

3. Explain three **environmental impacts** of using coal as a source of energy.

Impact 1:

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Impact 2:

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Impact 3:
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3 m 4. For this question, refer to Resource Booklet: Figures D2 and D3.

Suggest three reasons why energy consumption in **developed countries** has not increased significantly, or in some cases has even decreased, since the 1990s.

Reason 1:
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Reason 2:
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Reason 3:
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4 m 5. For this question, refer to Resource Booklet: Figure D4.

Due to the current geopolitical situation, Western companies are relocating manufacturing industries from Asia back to their home country or a neighbouring region. Discuss four possible **changes** to global primary energy consumption as a result of these relocations.

Change 1:
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Change 2:
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Change 3:
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Change 4:
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Section E: The Darién Gap

Resource Booklet Figure E1 shows main routes of irregular migration in the world.
 Resource Booklet Text Box E1 provides basic information on the Darién Gap.
 Resource Booklet Figure E2 shows the location of the Darién Gap.
 Resource Booklet Figure E3 provides data on the annual migration through Darién Gap from 2010 to 2024 by country of origin.

1 m

1. For this question, refer to Resource Booklet: Figure E1.

Identify the **primary direction** of irregular migration routes worldwide.

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4 m

2. For this question, refer to Resource Booklet: Text Box E1; Figures E2 and E3.

- a) Analyse the general **trend and sources** of migration through the Darién Gap. Justify your response with specific data.

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3 m

- b) Explain **two socio-economic** and **one environmental reason** for emigration from countries shown on the diagram. Use specific country examples to justify your answers.

Socio-economic reason 1:

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Socio-economic reason 2:.....

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Environmental reason:.....

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2 m c) Suggest **two reasons** why migrants from countries outside South America choose the Darién Gap route to their destination instead of other alternatives.

Reason 1:
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Reason 2:
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3 m 3. For this question, refer to Resource Booklet: Text Box E1.

Outline **three threats** that make crossing the Darién Gap extremely difficult for migrants.

Threat 1:
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Threat 2:
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Threat 3:
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2 m 4. For this question, refer to Resource Booklet: Text Box E1.

When Bajo Chiquito became the main reception centre for migrants, how might this have impacted **services and built environments** in the village? Give at least four specific examples.

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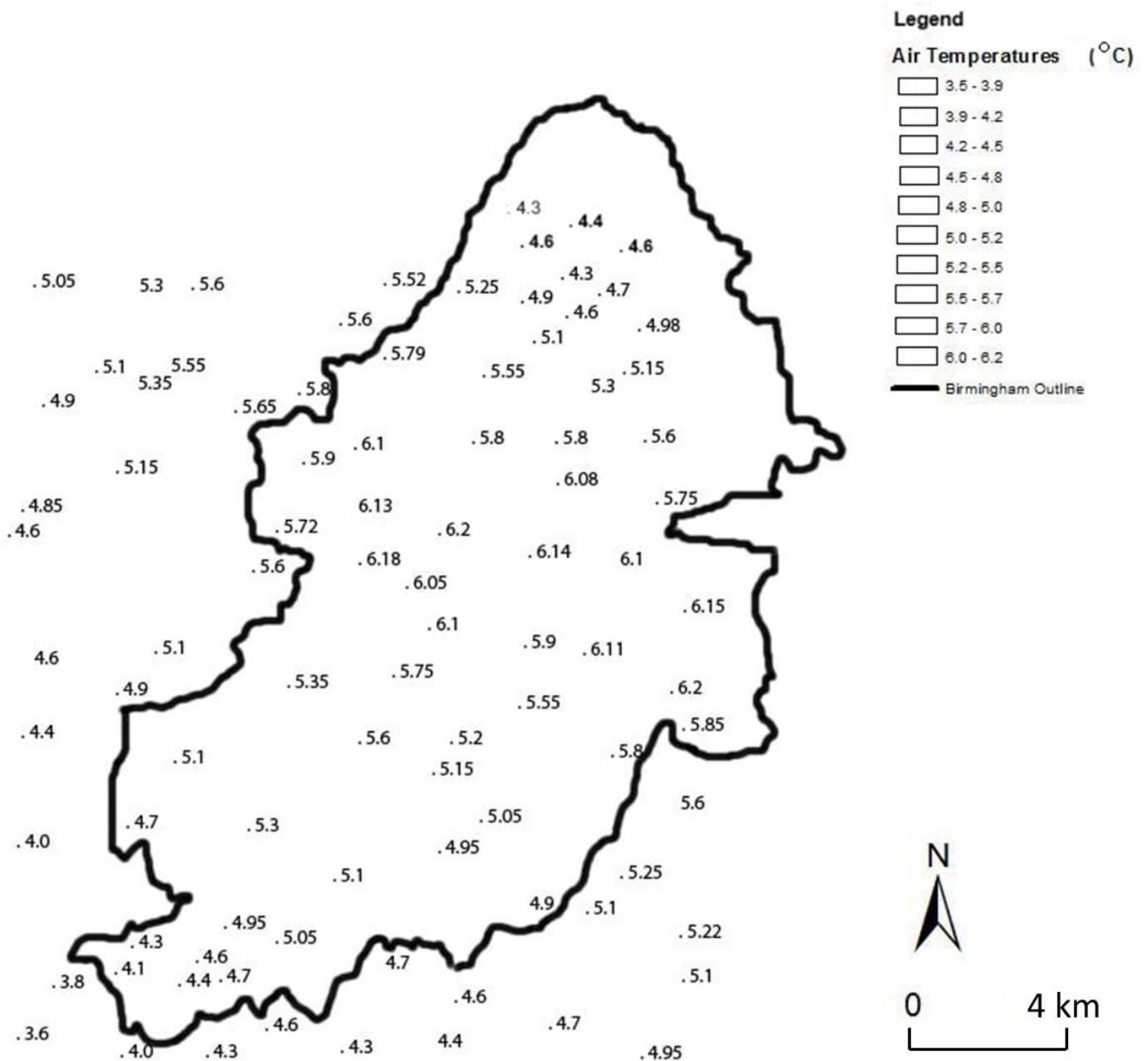
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Section F: Urban Heat Island

Resource Booklet Figure F1 shows a satellite image of Birmingham and the surrounding urban area.

1. Draw an **isopleth (air temperature) map** for Birmingham and the surrounding urban area. Draw isopleths at **3.9, 4.2, 4.5, 4.8, 5.0, 5.2, 5.5, 5.7 and 6.0 °C**. Colour the map and fill in the legend.
Note: air temperature data was for the night of February 19th 2014. The average temperature was 5.2 °C.



For this question, refer to Study Resource Booklet: Figure F1.

1.5 m

2. Analyse the satellite image and the map you drew in Q1.

Identify the area of Birmingham where urban heat island has formed and **describe** the land use in the area identified.

Area:

Land use:.....

4 m

3. Explain four **environmental impacts** of urban heat islands worldwide.

Impact 1:

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Impact 2:

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Impact 3:

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Impact 4:

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6 m

4. Name three **strategies** that cities can implement to mitigate the urban heat island effect and evaluate the **effectiveness** of the strategies you selected.

Strategy 1:

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Evaluation:.....

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Strategy 2:

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Evaluation:.....

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Strategy 3:

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Evaluation:.....

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You can use it for your notes, but please cross them through afterwards.

If you use it for answers, they **MUST** be clearly labelled with the Section and Question number.

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