1.1 Natural Hazards and Hazard Risk: 30-minute Pack

AQA 8035 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Two countries are each hit by a natural hazard of similar magnitude. Explain, using a range of factors, why the level of disaster impact could be very different in the two countries.

(Total for Question 1 is 5 marks)

2 'A country's level of development is the most important factor affecting its risk from natural hazards.' Assess the extent to which you agree with this statement.

(Total for Question 2 is 8 marks)

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3 Table 1 shows illustrative, hypothetical figures for the estimated number of people affected worldwide by four types of natural hazard over a ten-year period. These figures are for practice only and are not real global statistics.

Type of hazard	Estimated people affected (millions)
Flood	500
Drought	300
Storm	250
Earthquake	50

(a) Using Table 1, state which type of hazard affected the most people. **(1)**

(b) Calculate the total number of people affected across all four hazard types shown in Table 1. **(2)**

(c) Calculate the percentage of the total in Table 1 who were affected by flooding. Give your answer to one decimal place. **(3)**

(d) Suggest two reasons why flooding might affect far more people globally than earthquakes do, even though earthquakes can be very destructive locally. **(2)**

(Total for Question 3 is 8 marks)

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4 Explain how a country's level of development can affect its capacity to cope with a natural hazard.

(Total for Question 4 is 3 marks)

5 Suggest why hazard risk maps, produced using GIS, are useful to town and city planners.

(Total for Question 5 is 3 marks)

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Mark scheme · 1.1 Natural Hazards and Hazard Risk: 30-minute Pack

Question 1

development level, e.g. a lower-income country is likely to have less resistant building stock and fewer resources for emergency response, oe **B1**

population density, e.g. if the hazard strikes a more densely populated area in one country, more people are exposed, oe **B1**

preparedness, e.g. one country may have invested more in early warning systems, evacuation planning and public education, oe **B1**

accessibility/terrain, e.g. if the affected area is remote or has poor infrastructure, rescue and aid delivery is slower, worsening the impact, oe **B1**

an overall linking point, e.g. hazard risk therefore depends on more than just the physical size of the event; vulnerability and capacity to cope are just as important, oe **B1**

Answer: The two countries could differ in development level (affecting building resistance and emergency resources), population density in the affected area (affecting how many people are exposed), preparedness (early warning and evacuation planning), and accessibility (remote, poorly connected areas see slower rescue and aid). This shows that disaster impact depends on vulnerability and capacity to cope, not just the physical size of the hazard.

Question 2

Level 4 A detailed, well-balanced assessment that uses accurate reference to hazard risk factors (development, population density, preparedness, magnitude, predictability), ideally supported by named examples; reaches a clear, justified conclusion about the extent to which development is the dominant factor, while acknowledging other relevant factors. **7-8**

Level 3 A clear assessment that considers development alongside at least one other relevant factor; a conclusion is reached, though the balance of the argument may be less developed or use less named detail. **5-6**

Level 2 Some relevant points about factors affecting hazard risk are made, with limited development or generalised detail; a simple conclusion is given with little justification. **3-4**

Level 1 One or two isolated relevant points about hazard risk are made, with little or no comparison of factors. **1-2**

Level 0 No relevant content. **0**

Indicative content:

- Supports the statement: lower-income countries typically have less resistant building stock, fewer resources for early warning and emergency response, and less capacity to fund rapid recovery, so a similar-sized hazard often causes a far higher death toll and slower recovery than in a higher-income country.
- Challenges the statement: the magnitude, type and predictability of the hazard event itself also matter enormously; an extremely large or completely unpredicted event can overwhelm even a well-developed country's defences.
- Population density and exposure matter independently of development: a hazard striking a densely populated area causes a bigger disaster than the same event striking a sparsely populated one, regardless of income level.
- Preparedness and governance can differ even between countries at similar development levels, e.g. strict enforcement of building codes, public education and evacuation planning can reduce impact more than income level alone would predict.
- Accessibility and terrain affect how quickly help can reach those in need, which can worsen outcomes in remote or mountainous areas even within a wealthier country.
- A well-supported conclusion should weigh development against these other factors (magnitude, population density, preparedness, accessibility) before reaching a judgement, and may argue that development is a major factor but rarely acts alone.

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Question 3

(a) flood **B1**

(a) Answer: Flood.

(b) 500 + 300 + 250 + 50 seen, oe **M1**

(b) 1100 million cao **A1**

(b) Answer: 1,100 million.

(c) 500 / 1100 seen, oe **M1**

(c) answer x 100, oe **M1**

(c) 45.5% (accept 45.4-45.5%) cao **A1**

(c) Answer: 45.5%.

(d) floods happen more frequently than major earthquakes, oe **B1**

(d) floods can affect very large, densely populated areas such as river floodplains and low-lying coastal areas, whereas a single earthquake's damage is usually more localised around the epicentre, oe **B1**

(d) Answer: Floods happen more frequently than major earthquakes, and a single flood event can affect a very large, densely populated area such as a river floodplain, whereas earthquake damage is usually more localised around the epicentre.

Question 4

higher-income countries can usually afford better building design, monitoring and early warning technology, oe **B1**

they typically have better-resourced emergency services and can organise search, rescue and aid delivery more quickly, oe **B1**

they usually have insurance and government funds available, which speeds up recovery and rebuilding, oe **B1**

Answer: Higher-income countries can usually afford better building design, monitoring technology and early warning systems, have better-resourced emergency services for a faster response, and have insurance and government funds available to speed up recovery.

Question 5

they show clearly which areas are at greatest risk from a hazard, oe **B1**

planners can use this to avoid approving new housing or key infrastructure (e.g. hospitals) in the highest-risk zones, oe **B1**

resources for hazard preparation (e.g. shelters, evacuation routes, stronger building codes) can be targeted at the highest-risk areas rather than spread evenly, oe **B1**

Answer: Hazard risk maps show clearly which areas are at greatest risk, so planners can avoid approving new housing or key infrastructure there, and can target resources for preparation, such as shelters, evacuation routes and stronger building codes, at the highest-risk areas rather than spreading them evenly.

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