



ANDERSON SECONDARY SCHOOL
Preliminary Examination 2021
Secondary Four Express /
Secondary Five Normal Academic

CANDIDATE NAME: CLASS: INDEX NUMBER: **Humanities****2272/02**

Paper 2 Geography

24 August 2021

Insert 1

1 hour 40 minutes**0800 – 0940h****READ THESE INSTRUCTIONS FIRST**

This Insert contains Figs. 1, 2, 3 and Table 1 for Question 1, Fig. 5 for Question 2 and Figs. 7, and 8 for Question 5, and Figs. 10, 11, 12 and 13 for Question 6.

This document consists of **10** printed pages.

Setter: Ms Pearlín Tan and Ms Soh Si Ying

Fig. 1 for Question 1

Attractions and Facilities at Cliffs of Moher

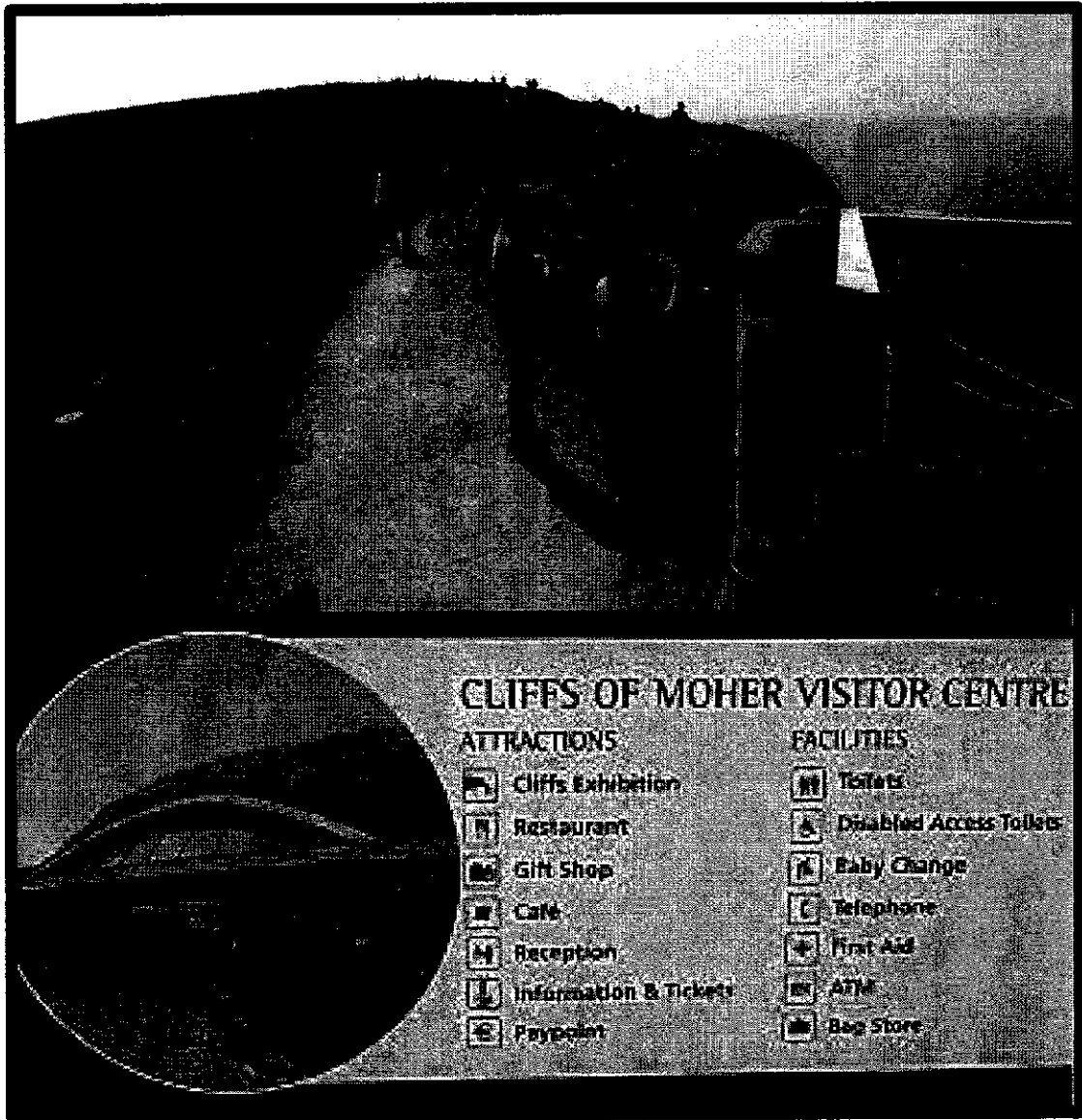


Fig. 2 for Question 1

Questionnaire survey

Hi. We are a group of students studying tourism.

1) Which country do you come from?

2) Why are you visiting Cliffs of Moher?

- culture & heritage sites such as castles
- adventure activities such as cave exploring and hiking
- Irish pub food and music
- the scenery and getting close to nature
- a few reasons

3) Who are you travelling with?

- family
- friends and colleagues
- my partner
- alone

Tourists' travel arrangements and reasons for visiting

	Traveling with family	Traveling with friends/colleagues	couples	Solo travellers
Culture & heritage sites	10	0	5	3
Adventure activities	4	2	8	17
Pub food and music	0	1	1	2
Scenery and nature	14	12	4	10
A few reasons	2	0	2	3
Total	30	15	20	35

Table 1

Fig. 3 for Question 1

Results for reasons for visiting Cliffs of Moher

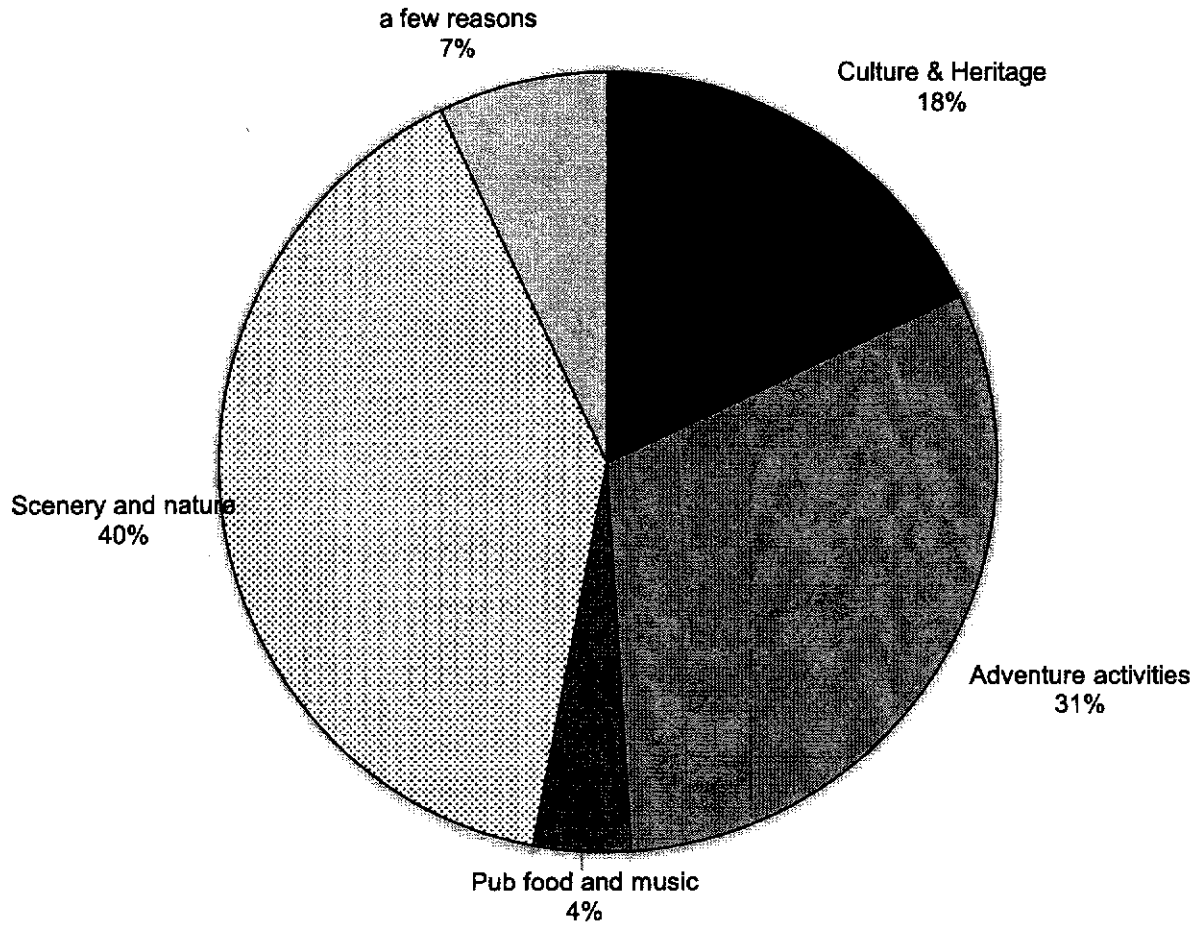


Fig. 5 for Question 2

Daily total rainfall and wind direction in February

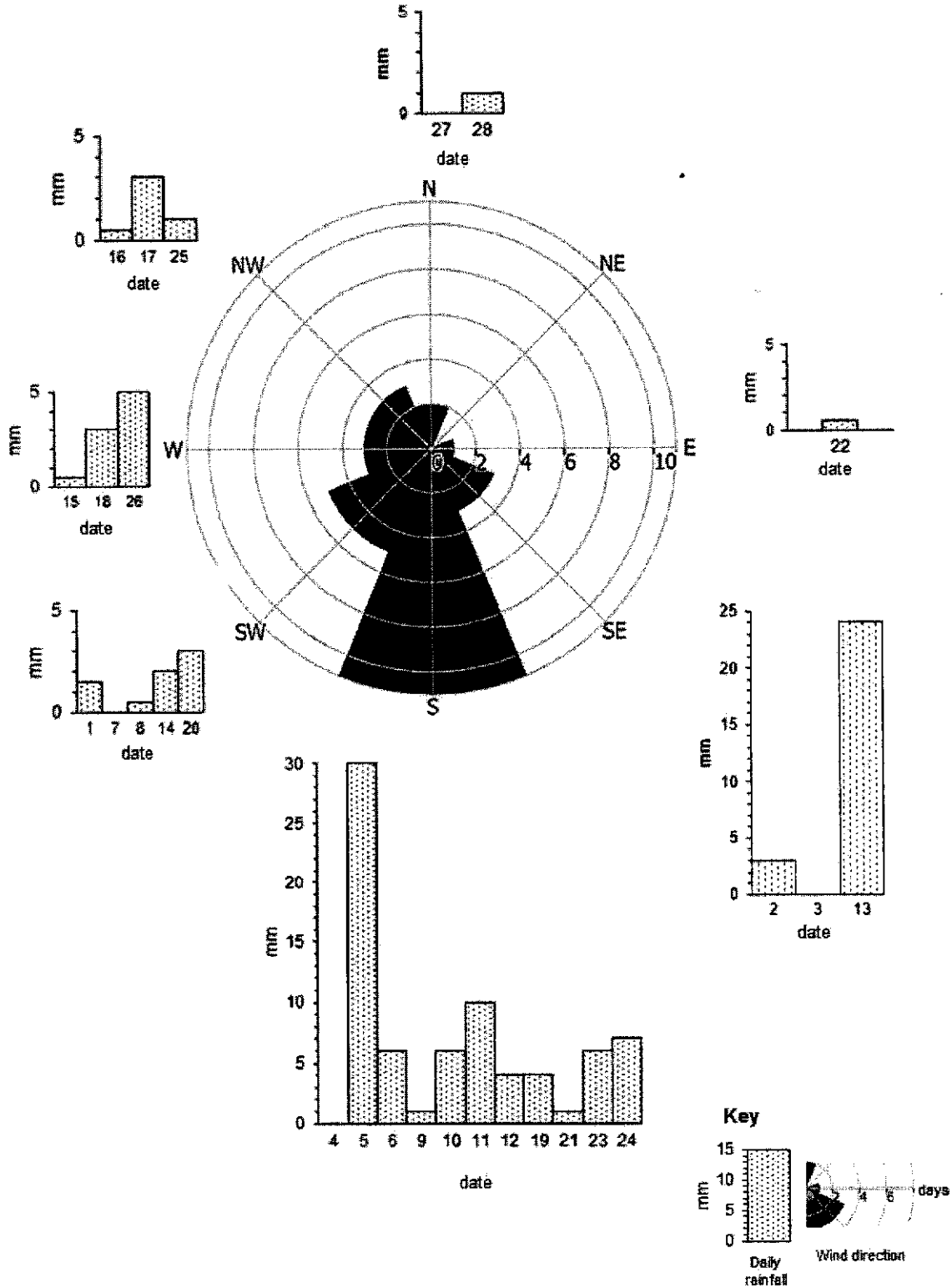
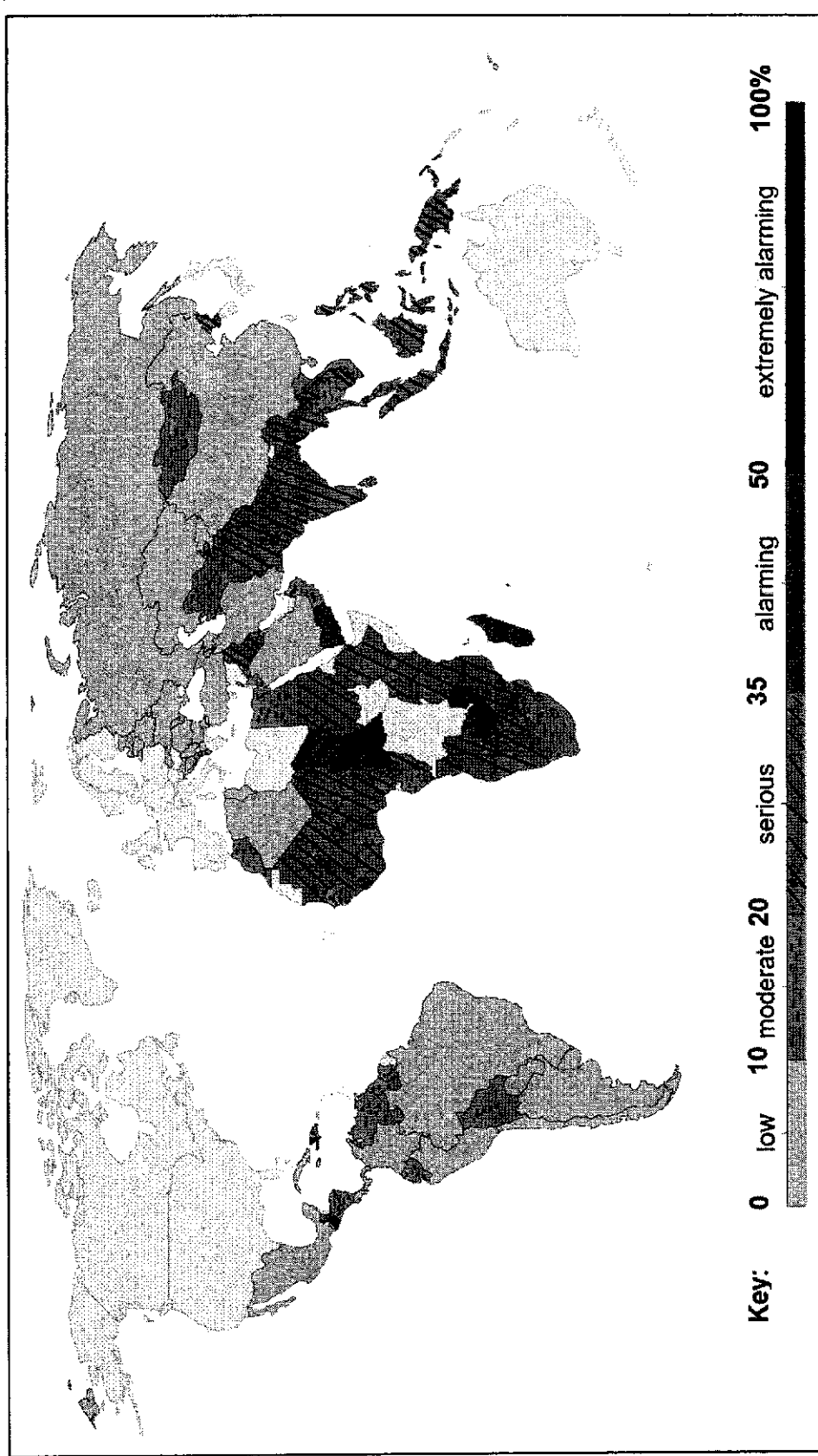


Fig. 7 for Question 5 (Do not do this qn, not in syllabus for O levels)

Global Hunger Index in 2018



7

[ssx1]

Prelim 4E/5NA Hum: GE 2021 2272/2

Fig. 8 for Question 5 [SSY2] (Do not do this qn, not in syllabus for O levels)

Global activities and operations of Nutella, an agribusiness

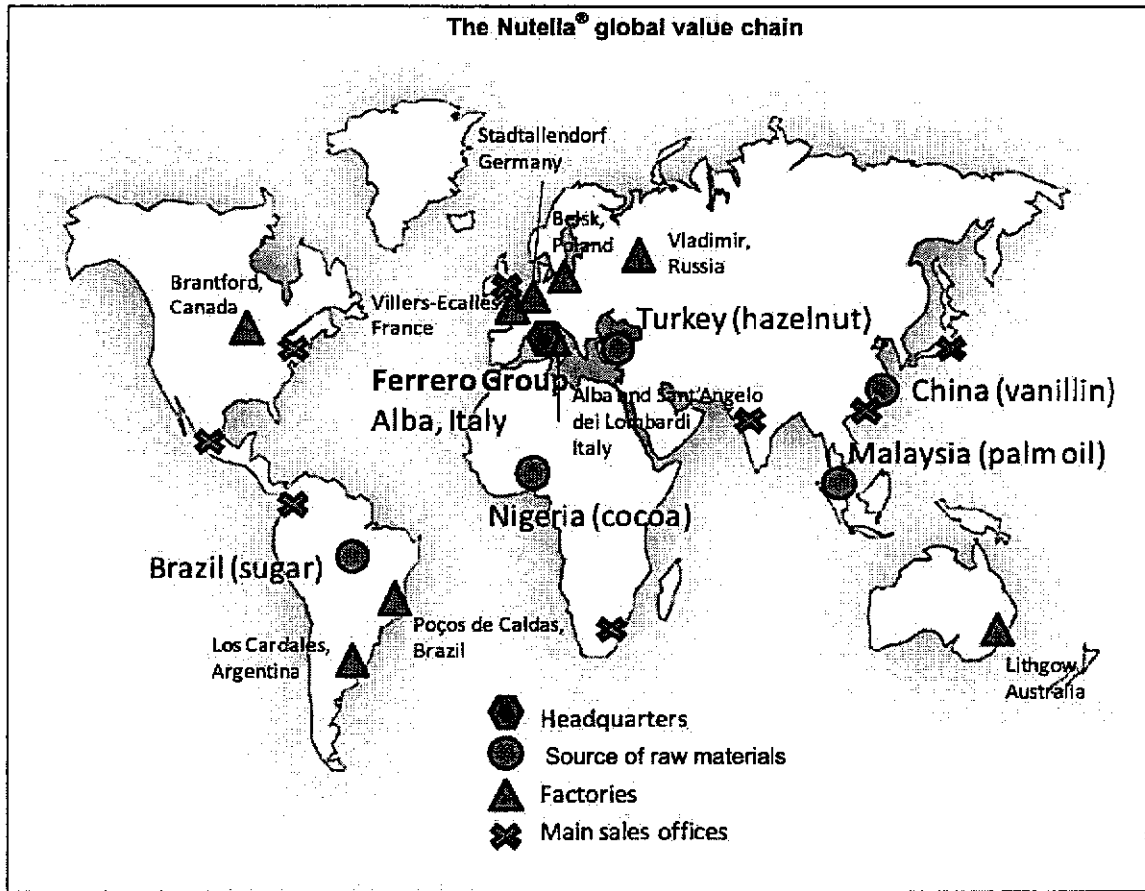


Fig. 10 for Question 6

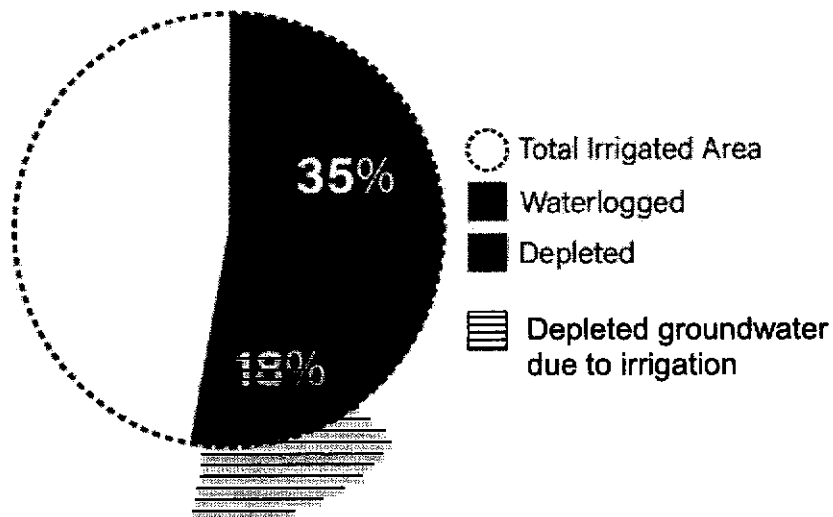


Fig. 11 for Question 6 (Do not do this qn, not in syllabus for O levels)

The spread and height of tsunami waves after the Chile earthquake, 2010

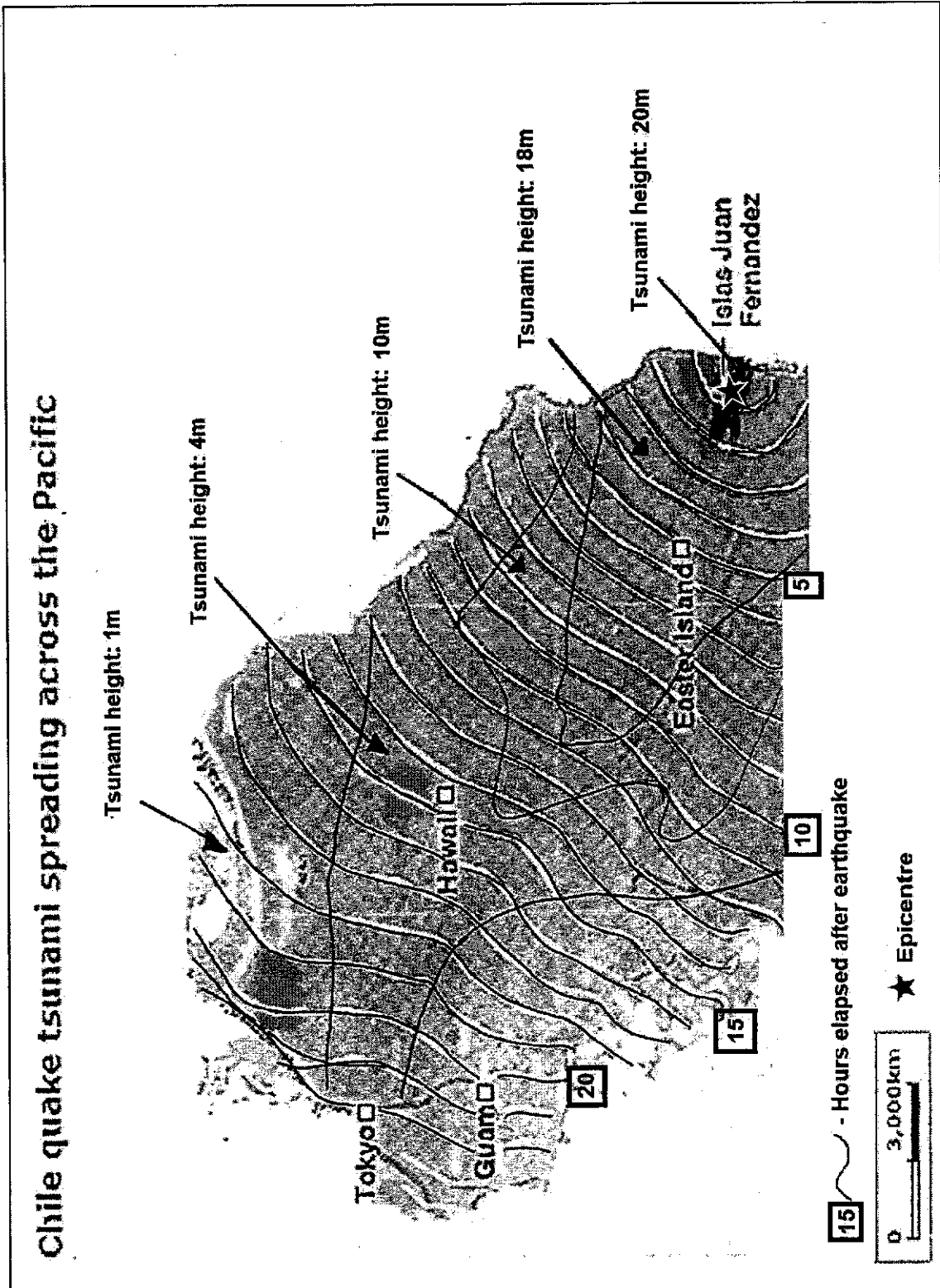


Fig. 12 for Question 6

World distribution of fold mountains, active volcanoes and earthquake zones

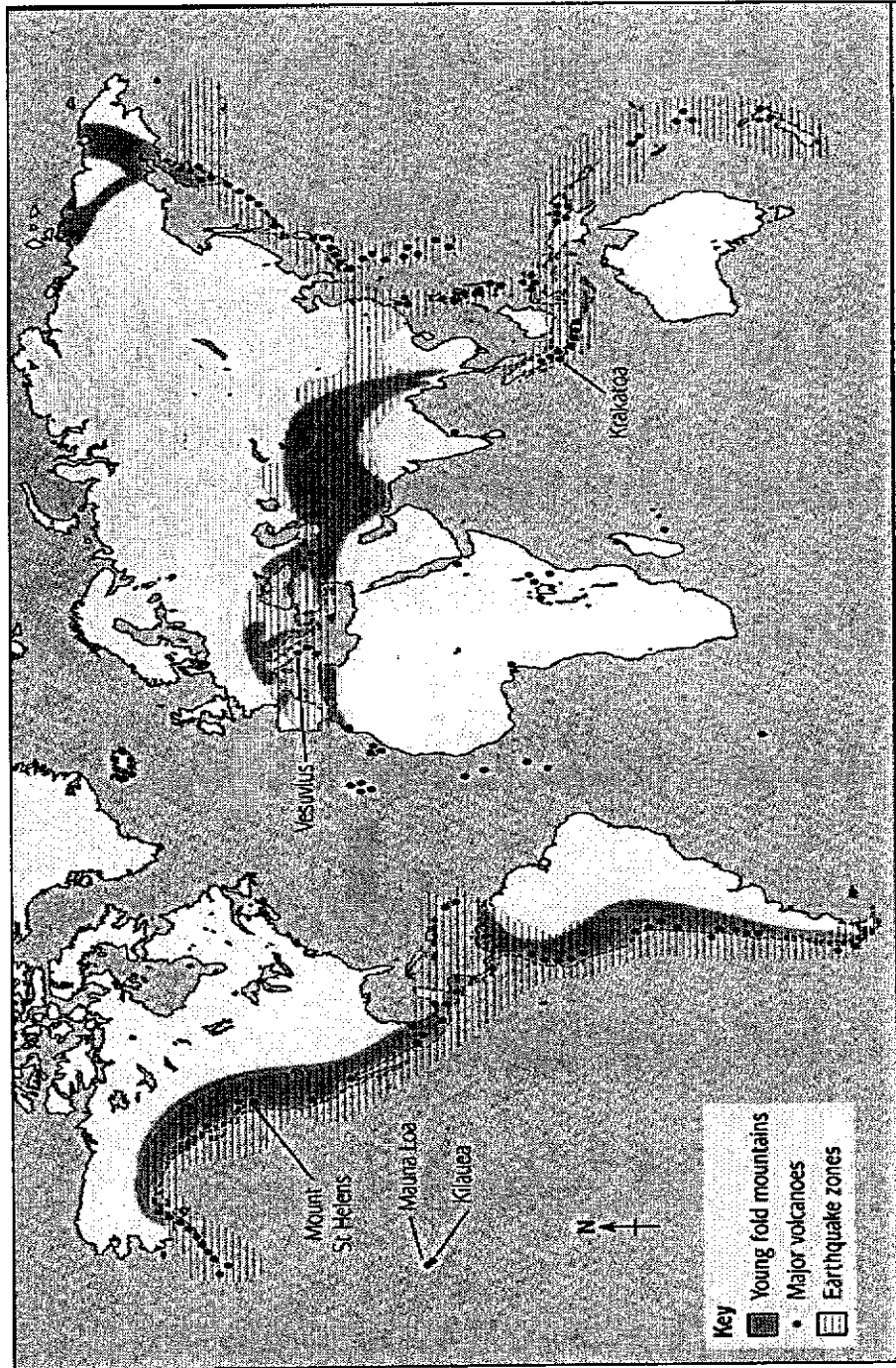
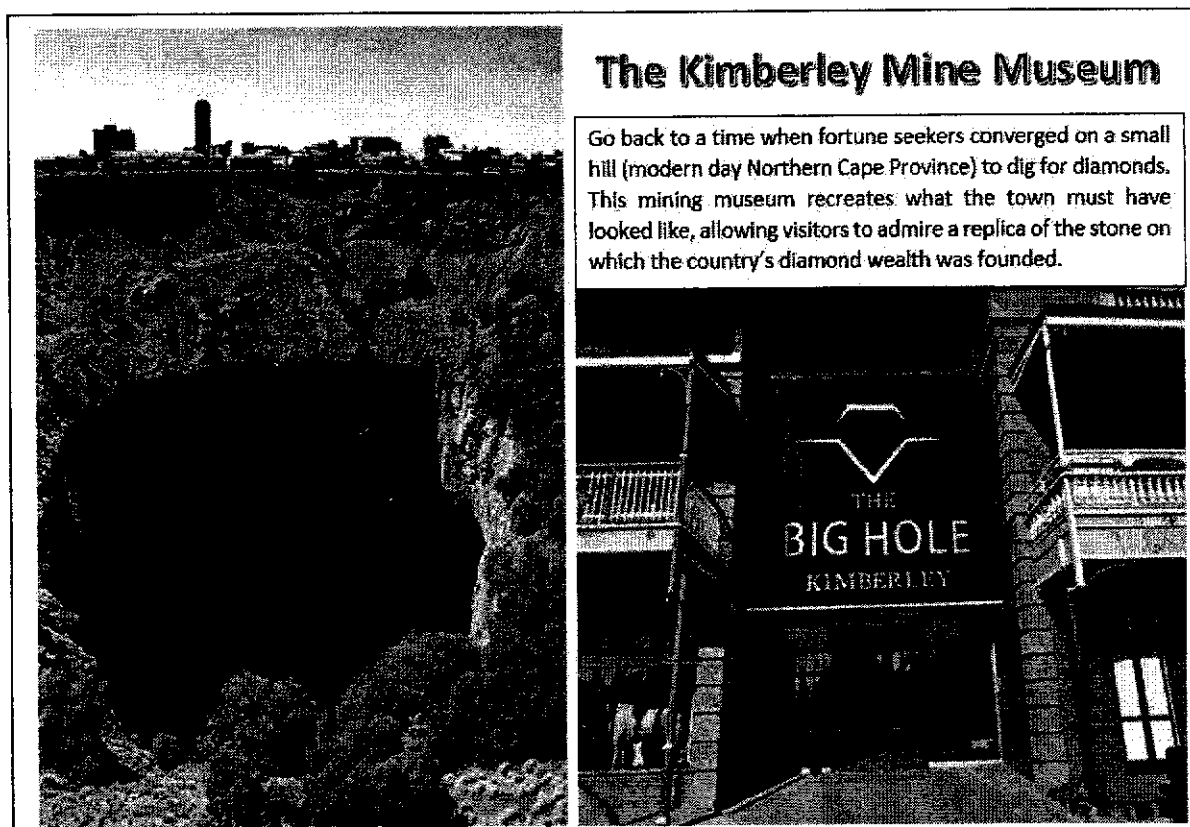


Fig. 13 for Question 6

An online advertisement for The Kimberley Mine Museum, South Africa



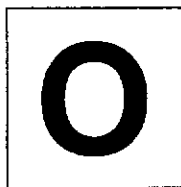
The Kimberley Mine Museum

Go back to a time when fortune seekers converged on a small hill (modern day Northern Cape Province) to dig for diamonds. This mining museum recreates what the town must have looked like, allowing visitors to admire a replica of the stone on which the country's diamond wealth was founded.

THE
BIG HOLE
KIMBERLEY

Copyright Acknowledgements:

- | | |
|---------------------|---|
| Fig. 1, Question 1 | © https://www.must-see-scotland.com/cliffs-moher-from-galway |
| Fig. 7, Question 5 | © https://ourworldindata.org/hunger-and-undernourishment |
| Fig. 8, Question 5 | © https://www.researchgate.net/figure/Nutella-global-value-chain-Ferrero-Group-Source-Adopted-from-De-Backer-and-Miroudot_fig2_310732174 |
| Fig. 11, Question 6 | © http://newsimg.bbc.co.uk/media/images/47389000/gif/47389988_chile_wave_466.gif |
| Fig. 10, Question 6 | © https://www.worldbank.org/en/news/feature/2021/03/25/managing-groundwater-resources-in-pakistan-indus-basin |
| Fig. 12, Question 6 | © https://www.geographypods.com/uploads/7/6/2/2/7622863/179655544.jpg |
| Fig. 13, Question 6 | © https://www.southafrica.net/ql/en/travel/article/the-kimberley-mine-museum-northern-cape-recapture-the-heady-days-of-the-diamond-rush |



ANDERSON SECONDARY SCHOOL
Preliminary Examination 2021
**Secondary Four Express/
 Secondary Five Normal Academic**



CANDIDATE NAME:

CLASS:

 /

INDEX NUMBER:

HUMANITIES

2272/02

Paper 2 Geography

24 August 2021

1 hour 40 minutes

0800 – 0940h

Additional Materials: 2 Inserts
 12 Page Answer Booklet

READ THESE INSTRUCTIONS FIRST

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional answer paper ask the invigilator for writing paper.

Section A

Answer **one** question.

Section B

Answer **one** question.

Section C

Answer **one** question.

Candidates should support their answers with the use of relevant examples.
 Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

The number of marks is given in brackets [] at the end of each question or part question.

This document contains 6 printed pages.

Setter: Ms Pearlin Tan and Ms Soh Si Ying

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Section A

Answer one question.

- 1 A group of students visited the Cliffs of Moher in Ireland to investigate the tourists' travel arrangements and their reasons for visiting. Travel arrangements include solo travelers, couples, family with young children, and travelling with friends. Fig. 1 (Insert 1) shows information about the Cliffs of Moher.
- To investigate the reasons for visiting, the students produced a questionnaire to survey 100 tourists in June 2019. The questionnaire is shown in Fig. 2 (Insert 1).
- a) The students received feedback from their teacher that a pilot survey should be conducted.
Explain why a pilot survey is helpful for the investigation. [1]
- b) i) Describe the advantages of conducting questionnaire surveys to gather responses. [2]
- ii) What are some considerations students should make before conducting the questionnaire surveys at Cliffs of Moher? [2]
- c) The students collated the results for Question 2 and 3 from the survey in Table 1 and Fig. 3 (Insert 1).
- i) Use Table 1 to complete the pie chart on Fig. 4 (Insert 2) to represent results from tourists traveling as couples and the reasons for visiting. [3]
- d) Based on the observations presented in Table 1 and Fig. 3, the students concluded that all tourists travel to Cliffs of Moher for scenery and nature.
Evaluate the validity of the group's conclusion. [5]

- 2 A group of students in Ireland were studying how to weather information and if there might be a relationship between weather data measurements collected. They focused their study on rainfall, and investigated the following hypothesis:

'Daily rainfall totals are influenced by the direction from which the wind is blowing.'

- a) Explain what is meant by secondary data and suggest one that students might find useful for their investigations. [2]

The students decided to collect their data at 09:00 on each day in the month of February.

- b) Suggest ways in which the students can improve the reliability and accuracy of the weather data on rainfall and wind direction collected. [3]

- c) The students represented their daily measurements of rainfall and wind direction in February on Fig. 5 (Insert 1).

- i) Identify the prevailing wind direction in February. [1]

- ii) Complete Fig. 6 in Insert 2 using the rainfall measurements for 3rd, 4th and 27th February shown in Table 2 below.

Table 2

Date in February	Total rainfall	Wind direction
3 rd	16.0	Southeast
4 th	7.0	South
27 th	4.5	North

[3]

- d) What conclusion can the students make about the hypothesis 'Daily rainfall totals are influenced by the direction from which the wind is blowing'? Support your answer with evidence. [4]

Section B**Answer one question.**

- 3 a) Explain the role of technology in promoting the growth of global tourism. [4]
- b) "Planning authorities play a more important role in conserving and protecting fragile tourist areas than tour operators."
- How far do you agree with this statement? Give reasons to explain your answer. [8]
- 4 a) Describe community-based tourism and explain how it provides benefits to the destination countries. [4]
- b) "Anthropogenic causes outweigh the natural causes of climate change."
- To what extent is this statement true? Give examples to support your answer. [8]

Section C

Answer one question.

- 5 (a) ~~Study Fig. 7 (Insert 1), the Global Hunger Index, which calculates the prevalence of undernourishment, childhood wasting¹, childhood stunting and child mortality throughout the world in 2018.~~
- (i) ~~Use Fig. 7 to outline the pattern of hunger throughout the world in 2018.~~ [4]
- (ii) ~~With reference to Fig. 7, suggest reasons why the prevalence of undernourishment varies throughout the world.~~ [4]
- (b) ~~Fig. 8 (Insert 1) is a map showing the global activities and operations of Nutella, an agribusiness.~~
- ~~Compare the locations of factories and sources of raw materials of Nutella's global value chain, and suggest how the operations of Nutella are typical of an agribusiness.~~ [5]
- (c) ~~With reference to Fig. 9, compare the changes in vegetable consumption amongst the various countries from 1980 to 2017.~~ [4]

Vegetable consumption per capita in 1980 and 2017 across the various countries

Country	Vegetable consumption per capita in <u>1980</u> (kg/person/year)	Vegetable consumption per capita in <u>2017</u> (kg/person/year)
China	80	377
India	36	190
USA	93	113
Somalia	42	67

Fig. 9

- (d) 'Food wastage is a greater impact of excess food consumption for countries as compared to lowered economic productivity.'
- To what extent do you agree with this statement? Give evidence to support your answer. [8]

¹wasting: occurs when a person has not had food of adequate quality and quantity and/or they have had frequent or prolonged illnesses

- 6 (a) ~~Study Fig. 10 (Insert 1), which shows the uses of water in agriculture in Pakistan.~~

~~Explain how irrigation of agricultural crops can have an effect on water availability and soil quality.~~ [4]

- (b) Study Fig. 11 (Insert 1), a map showing the spread and height of the tsunami waves caused by the Chile earthquake in 2010.

Describe the spread and height of the tsunami waves as shown in Fig. 10. [4]

- (c) Fig. 12 (Insert 1) shows the world's major fold mountains, active volcanoes and earthquake zones.

Use Fig. 12 to describe the distribution of fold mountains, active volcanoes and earthquake zones in the world. [5]

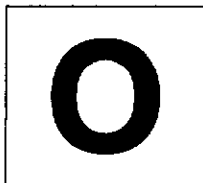
- (d) Fig. 13 (Insert 1) is an online advertisement for The Kimberley Mine Museum in South Africa.

Using Fig. 13, describe and explain how living near volcanoes has benefitted the people living in Northern Cape Province, South Africa. [4]

- (e) 'Emergency drills have greatly reduced impacts from earthquakes.'

To what extent do you agree with this statement? Give evidence to support your answer. [8]

END OF PAPER



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CANDIDATE NAME:

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INDEX NUMBER:

HUMANITIES

2272/02

Paper 2 Geography

24 August 2021

Insert 2

1 hour 40 minutes

0800 – 0940h

READ THESE INSTRUCTIONS FIRST

Insert 2 contains Fig. 4 for Question 1, and Fig. 6 for Question 2.

If you have completed Fig. 4 for Question 1 or Fig. 6 for Question 2, write your name, class and index number in the spaces provided and attach Insert 2 to your answers.

This document consists of 3 printed pages and 1 blank page.

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Fig. 4 for Question 1

Tourists traveling as couples and reasons for visiting

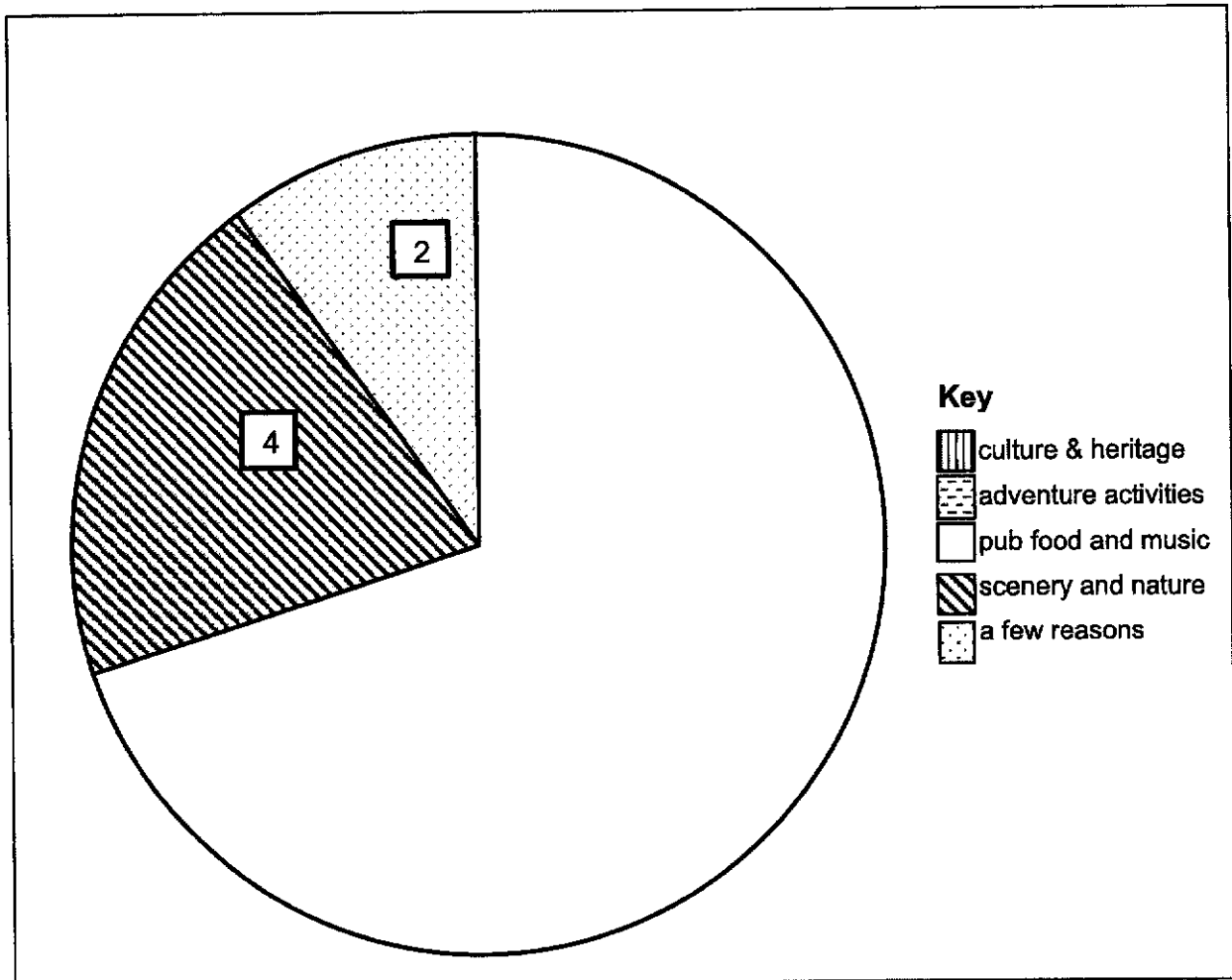
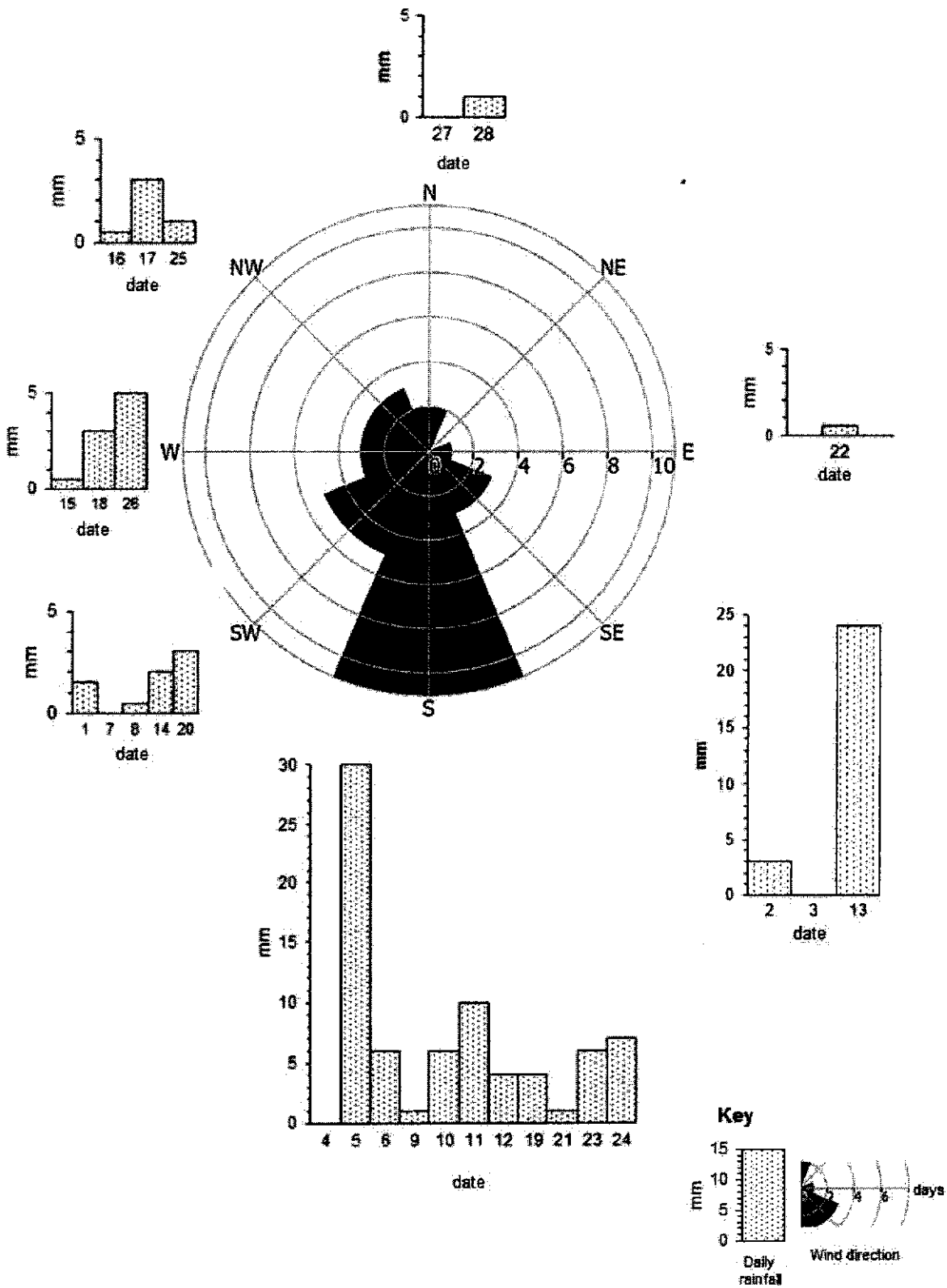


Fig. 6 for Question 2



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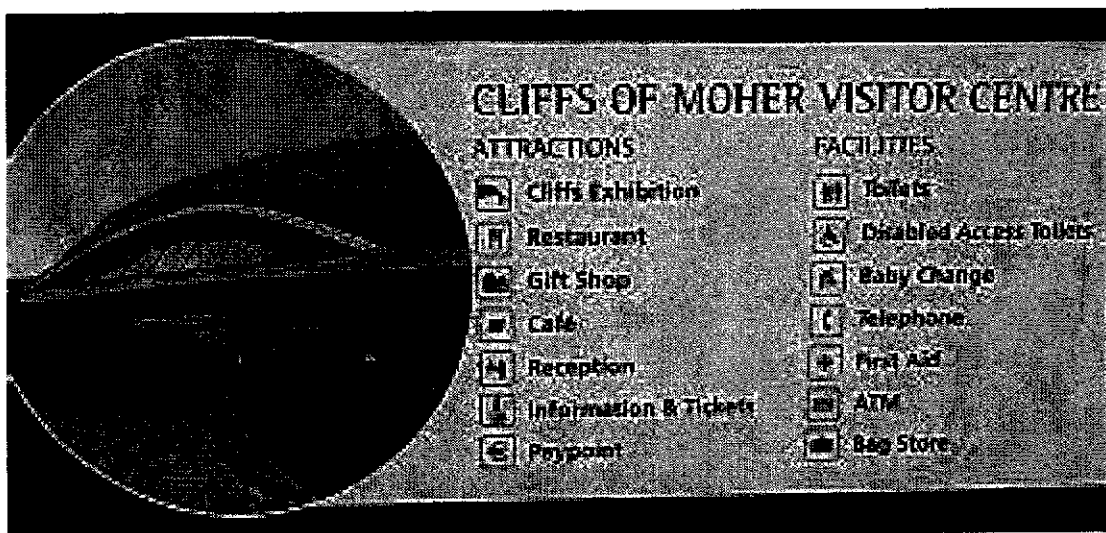
Section A
Answer one question.

- 1** A group of students visited the Cliffs of Moher in Ireland to investigate the tourists' travel arrangements and their reasons for visiting. Travel arrangements include solo travelers, couples, family with young children, and travelling with friends. Fig. 1 (Insert) shows information about the Cliffs of Moher.



Fig. 1

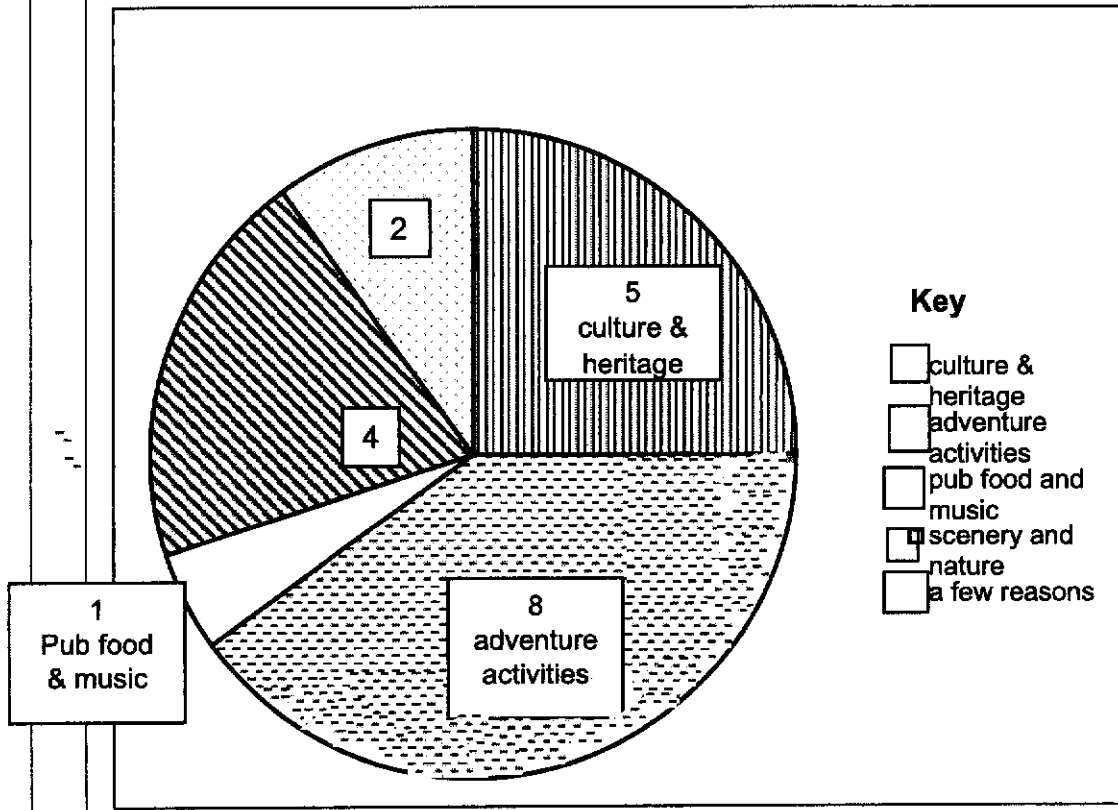
<https://www.must-see-scotland.com/cliffs-moher-from-galway>



	<p>To investigate the reasons for visiting, the students produced a questionnaire to survey 100 tourists in June 2019. The questionnaire is shown in Fig. 2 (Insert).</p>	
	<p style="text-align: center;"><u>Questionnaire</u></p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Hi.</p> <p style="text-align: center;">Which country do you come from?</p> <hr/> <p>Why are you visiting Cliffs of Moher?</p> <p><input type="checkbox"/> Culture & heritage sites such as castles</p> <p><input type="checkbox"/> Adventure activities such as cave exploring and hiking</p> <p><input type="checkbox"/> Irish pub food and music</p> <p><input type="checkbox"/> The scenery and getting close to nature</p> <p>a few reasons</p> <p><input type="checkbox"/> Who are you travelling with?</p> <p><input type="checkbox"/> family</p> <p><input type="checkbox"/> friends and colleagues</p> <p><input type="checkbox"/> my partner</p> </div> <p style="text-align: center;">Fig. 2</p>	
<p>a)</p>	<p>The students received feedback from their teacher that a pilot survey should be conducted.</p>	
	<p>Explain why a pilot survey is helpful for the investigation.</p>	<p>[1]</p>
	<p>- A pilot survey can help students to identify places at Cliffs of Moher that are suitable for data collection</p>	

		<ul style="list-style-type: none"> - They can test out their sampling / data collection method, in order to refine them - It can also help them determine which is the best time of the day with most tourist crowd so that it is easy to survey 100 		
b)	i)	Describe the advantages of conducting questionnaire surveys to gather responses.	[2]	
		<ul style="list-style-type: none"> - Questionnaire surveys are advantageous as they allow for both open and close-ended questions, a wide variety of data (quantifiable and qualitative) to be collected for investigation - It is usually quick to complete, as compared to interviews - Many can be done at the same time, administered by different students in different places 		
	ii)	What are some considerations students should make before conducting the questionnaire surveys at Cliffs of Moher?	[2]	
		<ul style="list-style-type: none"> - Students should consider the sampling method to survey 100 tourists, such as using systematic sampling by selecting every 5th tourist who walks by a specific point (e.g. outside visitor centre) as systematic sampling is the most convenient and time-efficient way - Where to conduct the surveys – outside visitor centre is ideal as that is where most, if not all the tourists will pass by - Students can also consider going to the gift shops or reception where tourists will usually linger, rather than along the coastal walks which tourists may not stop - Safety considerations as parts of the walk at cliffs of Moher are near the cliff sides and may be dangerous - When to conduct the surveys – for instance conducting on the same day, repeating for several days of the week to ensure reliability of data <p>Accept other plausible answers</p>		
c)	The students collated the results for Question 2 and 3 in Table 1 and Fig. 3 (Insert).			
Table 1				
Tourist's travel arrangements and reasons for visiting				
	Traveling with family	Traveling with friends/colleagues	couples	Solo travelers
Culture & heritage sites	10	0	5	3
Adventure activities	4	2	8	17
Pub food and music	0	1	1	2
Scenery and nature	14	12	4	10

		A few reasons	2	0	2	3														
		Total	30	15	20	35														
		Fig. 3 for Question 1 Reasons for visiting																		
		<p>A pie chart titled 'Reasons for visiting' showing the following data:</p> <table border="1"> <thead> <tr> <th>Reason</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Scenery and nature</td> <td>40%</td> </tr> <tr> <td>Adventure activities</td> <td>31%</td> </tr> <tr> <td>Culture & Heritage</td> <td>18%</td> </tr> <tr> <td>a few reasons</td> <td>7%</td> </tr> <tr> <td>Pub food and music</td> <td>4%</td> </tr> </tbody> </table>						Reason	Percentage	Scenery and nature	40%	Adventure activities	31%	Culture & Heritage	18%	a few reasons	7%	Pub food and music	4%	
Reason	Percentage																			
Scenery and nature	40%																			
Adventure activities	31%																			
Culture & Heritage	18%																			
a few reasons	7%																			
Pub food and music	4%																			
	i)	Use Table 1 to complete the pie chart on Fig. 4 (Insert 2) to represent results from tourists traveling as couples and the reasons for visiting. Use the results in Table 1 to complete the pie chart for tourists traveling as couples on Fig. 4 (Insert 2).						[3]												
		Answer:																		
		Fig. 4 for Question 1 Tourists traveling as couples and reasons for visiting																		



1m each for correctly shaded, labelled value of the 3 reasons
 *students need not label the activity name

d) Based on the observations presented in Table 1 and Fig. 3, the students concluded that all tourists travel to Cliffs of Moher for scenery and nature.

Evaluate the validity of the group's conclusion.

The group's conclusion is valid to a large extent,

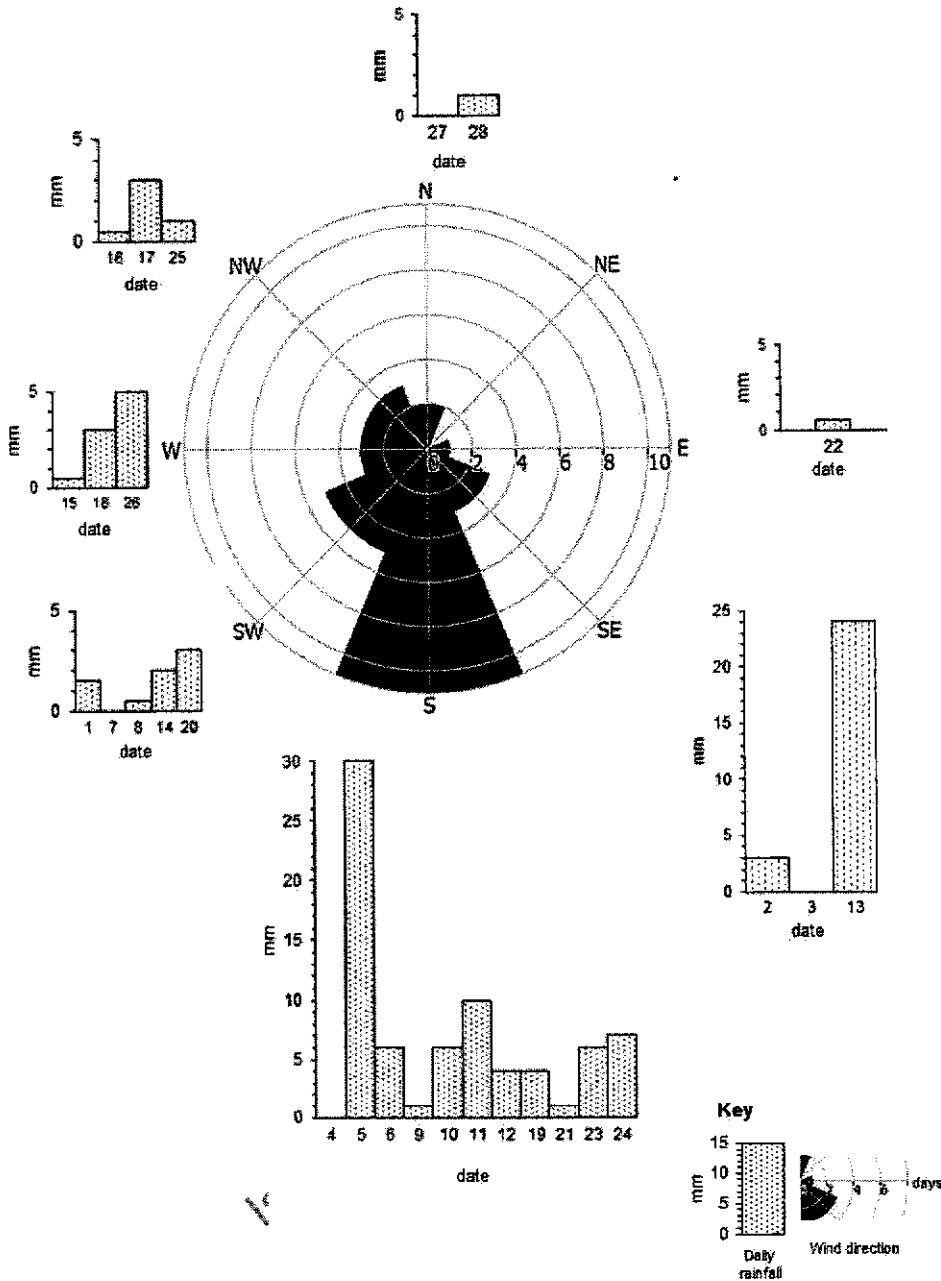
- as Fig. 3 shows largest percentage, 40% of people who were interviewed selected scenery and nature as their main reasons for visiting
- for groups traveling with family and friends/colleagues, a large number agrees that scenery and nature is their main reason for visiting; with 12 out of 15 tourists traveling with friends / colleagues and also 14 out of 30 tourists traveling with family

However, their conclusion may not be valid as there exist anomalies.
 anomalies:

	<ul style="list-style-type: none"> • however, the reason with the highest number of tourists who selected it as main reason for visiting is adventure activities, 17 tourists who travel solo selected that, • a significant number of tourists (10) also selected cultural and heritage, but only for tourists traveling with family 	
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2			
		<p>A group of students in Ireland were studying how to weather information and if there might be a relationship between weather data measurements collected. They focused their study on rainfall, and investigated the following hypothesis:</p> <p>'Daily rainfall totals are influenced by the direction from which the wind is blowing.'</p>	
	a)	Explain what is meant by secondary data and suggest one that students might find useful for their investigations.	[2]
		<ul style="list-style-type: none"> - secondary data s data collected secondhand, obtained from other websites than sources, not collected by investigator himself - one that student might find useful is local weather forecast, local weather historical records 	
		The students decided to collect their data at 09:00 on each day in the month of February.	
	b)	Suggest ways in which the students can improve the reliability and accuracy of the weather data on rainfall and wind direction collected.	[3]
		<p>Improving reliability</p> <ul style="list-style-type: none"> - other than at 9am, students can consider measuring wind direction at more times throughout 1 day to increase data sets collected - the location that wind direction is measured must be the same at all times - wind direction should be collected in sites that are open space / higher grounds / free from interception or blockage by vegetation or buildings / to ensure consistent and reliable readings - students should note down the weather conditions each day, which may influence wind direction felt and rainfall (unusual weather conditions such as storms may affect rainfall collected) <p><i>ideas such as conducting data collection at the same time is not accepted</i></p> <p>improving accuracy</p>	

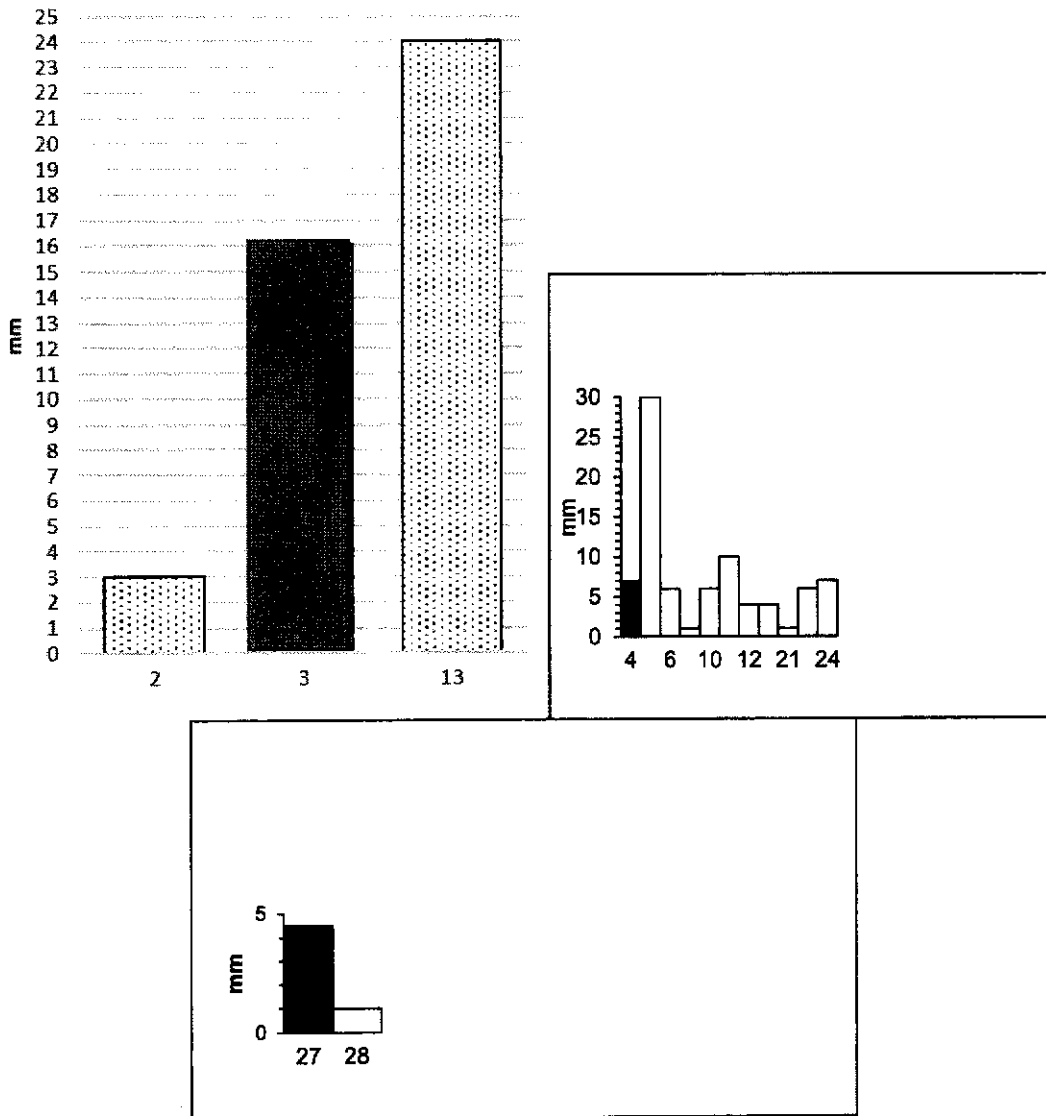
	<ul style="list-style-type: none"> - ensure that the weather instruments are in working condition (such as the wind vane) - ensure that the duration over which wind direction is measured is long enough to account for an accurate reading (so that it is not a one-off reading) - when reading the rainfall, pour the rain collected in the rain gauge into a measuring cylinder carefully, - and read the measurement with no parallax error at eye level - ensuring that weather instruments are placed at locations where they are in open locations, and that there are no obstructions (trees for collecting rainfall, or buildings to affect wind speed) to affect accuracy of data collected - use a compass to determine direction of wind, ensure that wind vane is pointed in the right direction <p>accept other plausible answers students should clearly state if the suggestion given is to improve reliability, or accuracy</p>	
c)	The students represented their daily measurements of rainfall and wind direction in February on Fig. 5 (Insert 1).	



- i) Identify the prevailing wind direction in February. [1]
 South, as wind direction is recorded in this direction for the most number of days (11) in the month of February
- ii) Complete Fig. 6 in Insert 2 using the rainfall measurements for 4th and 27th February shown below.

Date in February	Total rainfall	Wind direction
3 rd	16.0	Southeast
4 th	7.0	South
27 th	4.5	North

[2]



d)

What conclusion can the students make about the hypothesis 'Daily rainfall totals are influenced by the direction from which the wind is blowing'? Support your answer with evidence.

[4]

- Hypothesis is true to a large extent
- the highest / higher / high rainfall totals when wind is blowing from south and south-east – such as 24mm on 13 February and 30mm on 5 February (from Fig. 5/6)

		<p><i>Note: [students must state the rainfall amount & date to justify southerly winds creating higher rainfall]</i></p> <ul style="list-style-type: none"> - Lower / low rainfall totals when wind is blowing from other directions / named direction (N, E, W, SW, ranging from 3-5mm in each direction) <ul style="list-style-type: none"> o North winds – 4.5 and 1mm respectively o Northwest wind - highest of 3mm only on 17 Feb o West – 5mm max on 26 Feb o Southwest – 3mm max on 20 Feb o (from Fig. 5/6) <p><i>Note: [students must state the rainfall amount & date for at least 1 other wind direction]</i></p> <ul style="list-style-type: none"> - Highest rainfall when wind blows from the south is greater than the highest rainfall when wind blows from the north, [on 5 February it is highest rainfall of 30mm; compared to north (max of 4.5mm on 28 February)] 	

Section B		
Answer one question.		
3	a)	<p>Explain the role of technology in promoting growth of tourism. [4]</p> <ul style="list-style-type: none"> - Aviation technology improvements allow for shorter and faster travel, as aircrafts are more fuel-efficient/cost-efficient and there is less need for stopovers, making it more convenient / less time-consuming and attract more people to travel - Cost-efficiency allows budget airlines to operate, which lowers overall cost of air travel and make it affordable, and encourage more people to travel - Technology also enables ease of access to information, whereby mobile phones and internet/wifi are widely available, allowing people to research about holidays and do bookings online, hence convenient - Technology also boost the use of social media/other media platforms, sharing of positive reviews and travel photos and stories entice others to want to travel / promote lesser-known destinations (more destinations, more people travel)
	b)	<p>"Planning authorities play a more important role in conserving and protecting fragile tourist areas than tour operators."</p> <p>How far do you agree with this statement? Give reasons to explain your answer. [8]</p>
		<p>Main argument, in agreement with statement: Planning authorities play a more important role in conserving & protecting fragile tourist areas</p> <p>Discussion points may include,</p> <ul style="list-style-type: none"> - Planning authorities conserve and protect fragile tourist areas through regulations and restrictions of development, such as setting up reserves and national parks to protect fragile natural environments, fining offenders that destroy/damages fragile natural resources and the environment - They can directly channel funds collected from tourist expenditure/revenue for conservation purposes - Planning authorities can also draft laws and policies that help improve the quality of a tourist site. For instance, planning authorities can craft laws that limit the number of visitors to an attraction or regulate the type of commercial activity to prevent the carrying capacity of the fragile area from being exceeded - As part of the government, planning authorities can cooperate more easily with other government agencies to manage the impact of tourism. Planning authorities also have the advantage of being able to utilise a range of government resources

- For e.g. Bhutan's government practices '**low volume-high value**' tourism by charging tourists a levy for visiting the country, so as to restrict number of tourists as when there is overcrowding it will lead to environmental degradation and pollution.
- For e.g. Singapore's STB protects local ethnic enclaves such as Little India, Chinatown by preserving the architecture of the shophouses, channeling funds for the preservation works and to build museums in order to spread the cultural awareness and importance of protecting these local ethnic enclaves, thus in the long run contributing to protecting of culturally fragile areas
- *However, planning authorities often are limited in regulating individual behaviours, and rely on cooperation from other stakeholders in order to make sustainable management strategies successful*

Alternative argument, in disagreement with statement:

Tour operators play a more important role in conserving & protecting fragile tourist areas

Discussion points may include,

- Tour operators help to provide feedback on tourist attractions
 - Tour guides offer valuable feedback to planning authorities about the social and environmental conditions of a tourist attraction. Their input are often used by local communities and planning authorities to plan tourism management strategies in a tourist attraction in order to ensure that the areas under threat of degradation can be protected
- Tour operators contribute by regulating tourist behaviour
 - As tourist spend much of their time in a tourist attraction with tour guides or other staff of a tour operator, therefore tour operators are often in the best position to regulate tourist behaviour.
 - This includes preventing tourists from littering, wandering into restricted areas or making too much noise to **prevent damage to a tourist site**. In addition, tour operators have an incentive **in maintaining the quality of an attraction** because the attraction is their source of income
- *However, the need to generate profits for these businesses can sometimes bring tour operators into conflict with other stakeholders. It may also override concerns to preserve the environment (conservation and protection is not a top most priority) when addressing these concerns would reduce their profits*

Note: it is not necessary for students to discuss limitations of both stakeholders, but if it serves to evaluate

		<p>Evaluation</p> <ul style="list-style-type: none"> - Degree of impact: Planning authorities have the greatest control over use of resources and policymaking, which can directly affect conservation efforts. - Significance of outcome: tourism planning is done by the planning authorities, and thus without the top-down approach to conserve and protect, it is difficult for other stakeholders to enact any changes. 	
4	a)	Describe community-based tourism and explain how it provides benefits to the destination countries.	[4]
		<ul style="list-style-type: none"> - Community based tourism refers to tourism that involves local communities in decision making, tourism planning, and policy regarding tourism development through consultations and feedback between planning authorities and locals - They provide benefits such as direct income to the local people through jobs and businesses - Protection of cultures due to involvement of locals who know best of local constraints, and how to best preserve culture - Environmental safe-guarding, as locals value their local environment and natural resources and will ensure tourism planning take into account the environmental conservation 	
	b)	<p>“Anthropogenic causes outweigh the natural causes of climate change.”</p> <p>To what extent is this statement true? Give examples to support your answer.</p>	[8]
		<p>In disagreement with statement: natural causes</p> <p>Natural cause – variations in solar output</p> <ul style="list-style-type: none"> • Natural causes like variations in solar output can also cause climate change. • The sun emits solar radiation due to changes in its magnetic field. An increase in magnetic activity results in increase in solar radiation. The magnetic activity of the sun has a cycle that lasts about 11 years. This solar activity cycle was discovered through the study of sunspots. • Sunspots are cooler regions on the sun's surface that appear as dark spots. Although the spots are cooler, there are more sunspots when solar activity is high. This is because the areas surrounding the sunspots radiate more energy, which compensates for the lower temperatures of the sunspot areas. In short, sunspot activity is linked to the amount of solar radiation emitted. • The solar activity cycle is associated with the earth's cycles of high and low global temperatures. In 2000, there was an increase in the number of sunspots which coincided with higher solar activity. Global temperatures increased during this period. 	

Natural cause – volcanic eruption

- Volcanic eruptions also cause changes in global temperatures.
- When a volcano erupts, large volumes of carbon dioxide, water vapour, sulphur dioxide, dust and ash are released into the atmosphere.
- Sulphur dioxide reacts with water to form sulphur-based particles in the atmosphere. Together with dust and ash, these particles reflect solar energy back into space. This results in global dimming.
- An example of cooling influence is the eruption of Mt Pinatubo in the Philippines in 1991.
- The Pinatubo eruption released 17 million tonnes of sulphur dioxide into the atmosphere, forming sulphur-based particles that spread around the earth in two weeks.
- The sulphur-based particles reflected solar energy back into space and lowered temperatures in the northern hemisphere by as much as 0.6 C. The temporary lowering of global temperatures lasted for two years in some locations.
- However the effects are not long term. For example, two years after Mt Pinatubo had erupted, global climate returned to its original state. Furthermore, despite the large volumes of carbon dioxide released by volcanoes, human activities since the mid-1980s have resulted in more than 100 times the amount of carbon dioxide emitted by volcanoes.

In agreement with statement**Human / Anthropogenic causes**

- The **burning of fossil fuels** produces a large amount of energy that is important for human activities. Fossil fuels include oil, coal and natural gas.
- They are needed for industries, transportation and domestic and commercial activities. Due to the high carbon contents, fossil fuels contribute to the increase in greenhouse gases by producing large amount of carbon dioxide when burnt.
- The burning of fossil fuels is the highest contributor of greenhouse gases which leads to temperature increase.

Deforestation

- Another human activity that is responsible for temperature increase is **deforestation**.
- Forests absorb billions of tonnes of carbon dioxide every year via photosynthesis, thus taking in a large amount of global greenhouse gas emissions.
- With deforestation, there are fewer trees and plants to absorb carbon dioxide, leading to an increase in carbon dioxide levels in the atmosphere.

- There is plenty of carbon in the soil, accumulated through the decay of organic matter such as dead leaves and animals.
- When deforestation exposes soil to sunlight, the soil temperature increases, increasing the rate of carbon oxidation. This releases more carbon dioxide into the atmosphere. Thus, deforestation is the second largest contributor of greenhouse gases which then leads to temperature increase.

Changing landuses

- As **population** increases, demand for agriculture and industrial land also increases.
- Land converted to urban or built-up areas as more people choose to live in cities.
- More fossil fuels are also burnt to provide energy → increase in greenhouse gas emissions.
- **Cattle farming** releases millions of tonnes of methane into the atmosphere annually, as gases are released from the digestive systems of cattle. Methane is **23x more effective** compared to CO₂ in trapping heat.
- **Industrial landuses and factories** are major contributor of carbon dioxide through the **burning of fossil fuels** to create energy needed to run factory processes esp. in secondary industries (such as manufacturing)
- **Urbanisation** refers to the process by which an increasing number of people live in urban areas. Various human activities are concentrated or are necessary in urban places. Large amounts of fossil fuels burnt to **provide energy** for homes. **Urban transport and construction of infrastructure** also contributes a large amount of greenhouse gases.

Evaluation

- Anthropogenic causes are contributing to the emissions of greenhouse gases and resulting in climate change at a **larger scale, and unprecedented rates** that we have witnessed in just the last 50-60 years
- This is due to the increased amount of human activities in **both DCs and LDCs**, especially in changing the land use from forests to building homes, factories and transport systems, etc.
- The rate of global rise in temperatures has been exceptionally fast after 1980, where temperature has increased by 0.4° C in 20 years. Over the last 100 years, the earth has seen a gradual rise in temperature of 0.7° C. **This period coincided with the rise of industrialisation.**
- Natural causes like increase in sunspots **do not occur on a frequent basis** and thus does not contribute to a **sustained** rise in global temperature.
- Also, volcanic eruptions have **few long term effects** on the earth's climate. The temporary cooling will stop once the volcanic dust and ash settle.

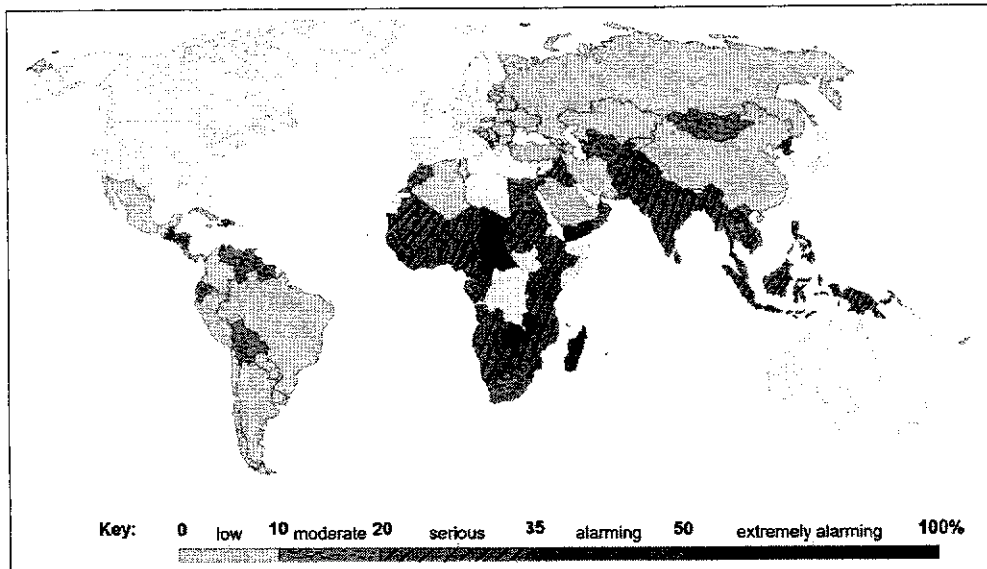
L1/1-3: only 1 cause is described and/or explained

	<p>L2/4: At least 1 anthropogenic and 1 natural cause must be clearly described and explained</p> <p>L2/5: both causes are well described and explained, with the use of at least 1 example</p> <p>L2/6: good examples used to substantiate both causes</p> <p>L3/7-8: logical and acceptable conclusion</p>	

Section C

Answer one question from this section.

- 5 (a) Study Fig. 7 (Insert [1] 1), the Global Hunger Index, which calculates the prevalence of undernourishment, childhood wasting¹, childhood stunting and child mortality throughout the world in 2018.
~~Study Fig. 7 (Insert [2] 1), the Global Hunger Index, which calculates the prevalence of undernourishment, childhood wasting, childhood stunting and child mortality on a scale of 0 (no hunger) to 100 (worst) [3] throughout the world in 2018.~~



- (i) Use Fig. 7 to outline the pattern of hunger throughout the world in 2018. [4]

- More than half of the world's population is facing a low level of hunger based on the index in 2018, with hunger index of 0 to 10
- Regions with developed countries (DCs) such as North America (USA, Canada), Western Europe and Australia face a lowest extent of hunger – index of 0 to 10,
- as compared to regions with less developed countries (LDCs), such as Sub-Saharan Africa, South and Southeast Asia which largely face serious hunger index of 20-35
- A wide range of hunger index is found within African continent, ranging from low to extremely alarming. Most of Sub-Saharan Africa faces serious hunger levels, especially the Eastern, Southern and Western parts, with central Africa facing an extremely alarming level of hunger
- Some parts of South America, namely the northern and central regions (Mexico) that face a moderate level of hunger of index 10-20
- If no reference to figure, cap at 1m

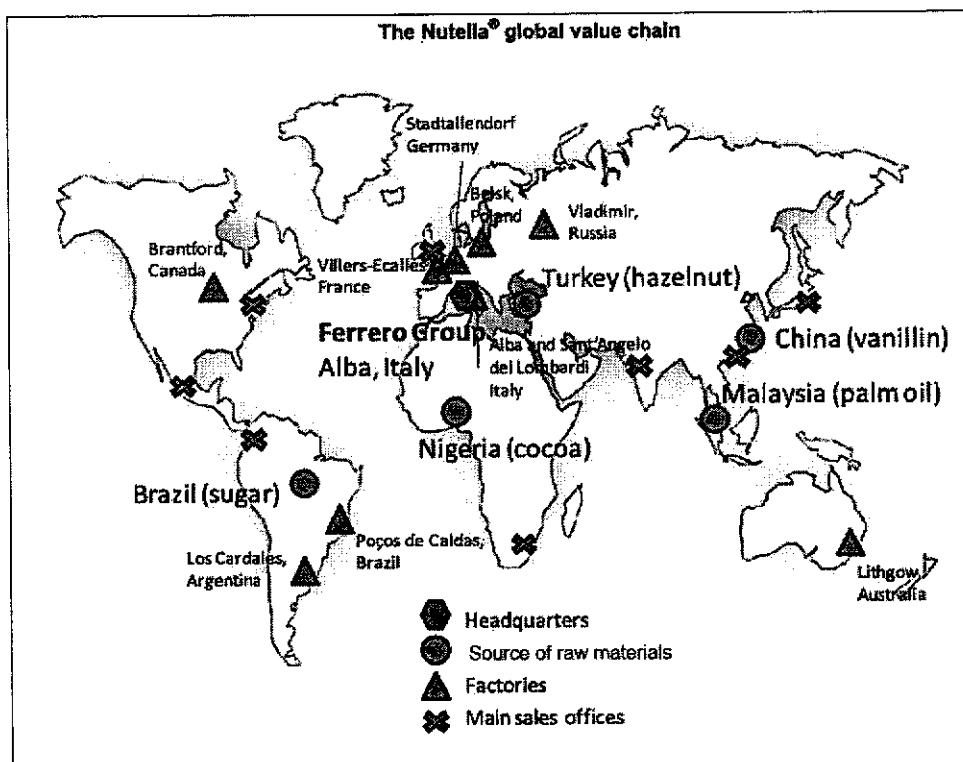
(ii) With reference to Fig. 7, suggest reasons why the prevalence of [4] undernourishment varies throughout the world.

- Economic:
 - Higher disposable income in DCs, leading to greater amount and types of food available to people in such nations as opposed to in LDCs
- Socio-cultural:
 - Preference for fast food: globalisation has resulted in many foreign investors choosing to set up fast food restaurants in LDCs – fast food lacks nutrition and is priced affordably, hence many locals in LDCs consume such food which lacks nutrition, leading to higher levels of undernourishment in people
 - Higher population growth levels in LDCs, leading to increased demand for food production – if demand cannot be met in these countries, hunger will result
- Political:
 - Unstable food supply in LDCs due to lack of technological advances in LDCs to increase food production, and LDCs are less able to cope with food price fluctuations and hence rarely rely on food imports to increase food supply in the country
 - Civil wars are usually more rampant in LDCs such as countries in Africa due to the unstable political background of such nations
- ~~Answers should address trends [4]~~
- Accept other plausible answers

(b) Fig. 8 (Insert 1) is a map showing the global activities and operations of Nutella, an agribusiness.

Fig. 8 for Question 5

Global activities and operations of Nutella, an agribusiness



Compare the locations of factories and sources of raw materials of Nutella's global value chain, and suggest how the operations of Nutella are typical of an agribusiness.

Fig. 8 (Insert 1) is a map showing the global activities and operations of an agribusiness:

[5]

Describe how the activities and operations shown in Fig. 9 are typical of an agribusiness, and suggest reasons for the sourcing & farming locations:

Fig. 8 (Insert 1) shows a food production chain of an agribusiness, the Archer-Daniels-Midland (ADM) company. Fig. 9 is a map showing the global food manufacturing and marketing reach of the ADM company, as well as the top origin and consumption locations in the respective years:

Using Figs. 8 and 9, describe the global reach of this agribusiness, and explain how agribusinesses like ADM increase the intensity of food production:

- Both factories and sources of raw materials are located in regions such as South America, Europe and Africa. However, only the sources of raw materials are located in Asia, whereas the factories are not
- Furthermore, the sources of raw materials are mostly located in LDCs such as Brazil, Nigeria, Malaysia and China, whereas the factories are distributed across DCs and LDCs, such as Canada, Germany, Australia, and Argentina and Brazil
- There are some agricultural crops which are sourced LDCs that have agricultural fields growing these raw materials, such as sugar from Brazil, cocoa from Nigeria and hazelnut from Turkey. However, the factories are located across the various regions without any specific product manufactured
- sourcing/farming locations Agribusinesses may only have a few headquarters, in this case one in Italy, but they have large food production chains that involve many parties — from producers, to distributors and consumers, an international reach in terms of their factories and supplier locations, in which the global scale can reach locations such as Canada, to parts of Europe, and even Africa and Asia.
- Agribusinesses also locate their sales offices in many different locations globally, having a global outreach in terms of marketing their products, such as in Europe, Asia, and North and South America.
- The intensity of food production is increased when the grains food suppliers export their manufactured products to be exported to other countries through multiple modes of transport such as trains and trucks, and marketed across the globe as well, increasing demand for food production and increasing the intensity of food production.
- The agribusiness is also able to process the produce into multiple types of food groups, from meals to oils, or starch and sweeteners, or flour, and even using it for fuel in industries. This further drives up demand for these crops and increases the intensity of production
- It can also cater to specific needs such as nutrition for humans and animals, or health and wellness ingredients, catering to a specific group of needs, further driving up the demand and hence intensity of food production [5]
- Accept other plausible answers, but answers need to draw reference to the figure
- Marks capped at 2 if no reference to any figure
- Marks capped at 2 if no usage of figures from Fig. 8

(c) With reference to Fig. 9, compare the changes in vegetable consumption [6] amongst the various countries from 1980 to 2017. With reference to Fig. 3, [4]

compare the changes in levels of vegetable consumption amongst the various countries from 1980 to 2017.

Vegetable consumption per capita in 1980 and 2017 across the various countries

Country	Vegetable consumption per capita in <u>1980</u> (kg/person/year)	Vegetable consumption per capita in <u>2017</u> (kg/person/year)	Change in vegetable consumption (kg/person/year)
China	80	377	297
India	36	190	154
USA	93	113	20
Somalia	42	67	25

Fig. 93

- All four countries have shown increases in their vegetable consumption from 1980 to 2017
- China has shown the greatest increase of almost 5 times in vegetable consumption from 1980 to 2017, with a 297kg increase. The lowest increase is USA, with only a 20kg increase in consumption
- Rapidly industrialising countries like China and India have shown the largest increases in vegetable consumption, with both countries showing an increase of more than 100kg
- Somalia, an LDC, also showed a small increase of only 25kg of vegetables as compared to the rapidly industrialising LDCs such as China and India
- No reference to data, cap at 1m
- Reserve 1m for similarity

(d) 'Food wastage is a greater impact of excess food consumption for countries as compared to lowered productivity.'

To what extent do you agree with this statement? Give evidence to support your answer. 'The increasing trend of dieting shows that there is adequate food supply for everyone globally.' [8]

To what extent do you agree with this statement? Give evidence to support your answer.

Impact of inadequate excess food consumption on individuals and countries

- Health

- ~~Malnutrition~~
- ~~Starvation~~ Obesity and related illnesses
- Economic
 - Lower productivity
 - ~~Food aid and economic aid can cause long term debts~~
 - ~~Diversion of financial resources to health care~~
 - Political
 - ~~Social unrest~~
- Social
 - Food wastage
 - Dieting
 - ~~Scavenging~~

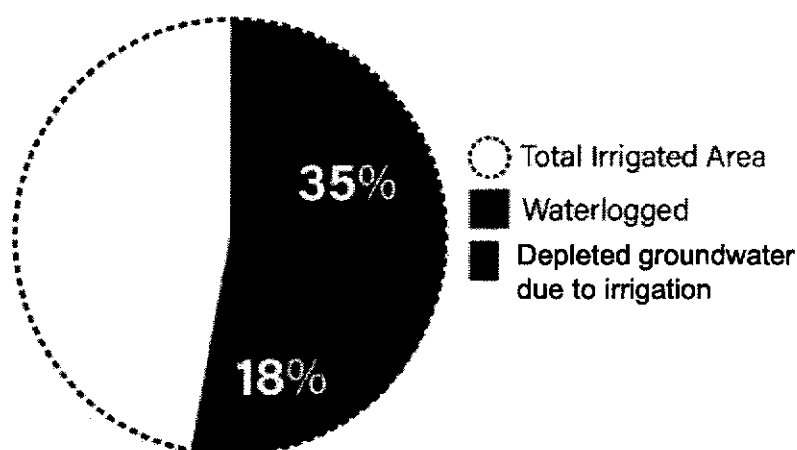
Evaluation:

~~Dieting is an increasingly common dietary practice of those living in DCs due to their excessive intake of food consumption. However, even if some nations have the capacity to reduce their food intake due to the large volume and easy access to food options, not every nation has such privileges. There are some nations which have their accessibility to food options hindered due to social unrest, and/or certain political and economic policies implemented by their government which impedes their ability to gain access to sufficient food in terms of amount as well as proper nutrition. Thus, this increasing trend is not necessarily a true reflection of the adequacy of food supply for all globally. Food wastage is a significant impact on a country, further contributing to the strain on already increasing landfills in countries due to the surge of consumption in DCs. This would have significant repercussions in the future due to greater rate at which landfills are being filled up as opposed to being cleared as more citizens in DCs are consuming more than what they need. This problem would have future ramifications for a country, and may even lower productivity to a greater extent due to the ever-increasing use of land to make way for food wastage.~~

Level 1 (0-3 marks)	Level 2 (4-6 marks)	Level 3 (7-8 marks)
<i>At this level, answers will be</i>	<i>At this level, answers will be</i>	<i>At this level, answers will be</i>
OVERALL		
<ul style="list-style-type: none"> ● Generalised statements that are not supported ● Basic answer with little or no development 	<ul style="list-style-type: none"> ● Some appropriate detail ● Answer is not full ● Lack some relevant detail 	<ul style="list-style-type: none"> ● Detailed response ● Comprehensive ● Supported by sound knowledge

<ul style="list-style-type: none"> • Naming of (factor or factors) • Brief description(s) • Lacking in detail • Too narrow in scope of content/example 		
ASSESSMENT		
<ul style="list-style-type: none"> • No stand is given • No or little attempt at assessment is made 	<input type="checkbox"/> Lack balance <input type="checkbox"/> Lopsided/one sided assessment <input type="checkbox"/> Attempt at assessment <input type="checkbox"/> Assessment is limited/general in nature	<input type="checkbox"/> Balanced <input type="checkbox"/> Assessment of 'extent/how far' <input type="checkbox"/> Assessment is directly related to/relevant to factors <input type="checkbox"/> Make a case
SUBSTANTIATION		
<ul style="list-style-type: none"> • With minimal support • An example may or may not be given 	<input type="checkbox"/> Support is patchy <input type="checkbox"/> Place-based/Located/Country example is given <input type="checkbox"/> An example is given to support answer in at least one place in the answer	<ul style="list-style-type: none"> • Support with evidence (i.e. examples) can be found in most places • Place-based/Located/Country example is given
REASONING & EXPRESSION		
<ul style="list-style-type: none"> • Reasoning is weak • Expression is unclear 	<input type="checkbox"/> Good reasoning and logic in parts <input type="checkbox"/> Good expression in some places	<input type="checkbox"/> Reasoning is clear <input type="checkbox"/> Good expression of language

6 (a)



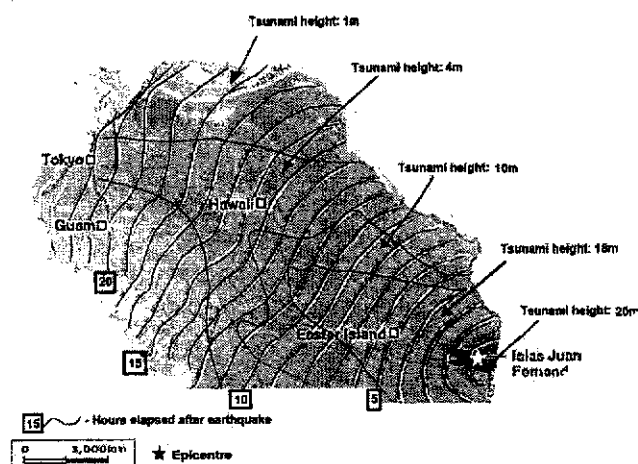
Study Fig. 10 (Insert 1), which shows the uses of water in agriculture in Pakistan.

Explain how irrigation of agricultural crops can have an effect on water availability and soil quality. [4]

- When not properly managed, extensive irrigation may cause the soil to be waterlogged as too much water has seeped into the soil, causing the soil to be over-saturated
- As shown in Fig. 10, out of the total irrigated area in Pakistan, 35% is waterlogged
- Roots of plants are deprived of air and nutrients, eventually causing them to die
- Salinisation occurs as well, when water added during irrigation evaporates directly from the moist soil, or when there is no proper drainage of excess water, causing salt to be left behind on the soil after evaporation
- The groundwater may reach the upper soil layers, bringing up dissolved salts from the ground, increasing the salinity of these soils. When the salt concentration is too high, crops are unable to grow well.
- Groundwater sources may be over-exploited and depleted, causing a loss of freshwater for the populations

- (b) Study Fig. 11 (Insert [7] 1), [8] a map showing the spread and height of the tsunami waves caused by the Chile earthquake in 2010.

Chile quake tsunami spreading across the Pacific



[4]

Describe the spread and height of the tsunami waves as shown in Fig. 11. Study Fig. 4 (Insert), a map showing the spread and height of the tsunami waves caused by the Chile earthquake in 2010.

Describe the spread and height of the tsunami waves as shown in Fig. 4.

- The spread of the tsunami waves was quite extensive, reaching up to 15,000km in distance, all the way from the epicentre in Islas Juan Fernandez to Tokyo
- It was extensive to the point in which Tokyo felt the impacts of the tsunami waves 22 hours away, affecting locations such as Easter Island and Hawaii along the way as well
- The greatest tsunami heights received were up to 20m, at which the epicentre was located at Islas Juan Fernandez.
- Easter Island, located 5250km away and 5 hours of travel time away, experienced a great tsunami wave height of up to 18m
- The tsunami wave heights then started to drop thereafter, in which places like Guam, 14,250km away, with 20 hours travelling time experienced the lowest tsunami heights of 1m
- Cap at 1m without any data use

- (c) (i) Fig. 12 (Insert [9] 1) [10] shows the world's major fold mountains, active volcanoes and earthquake zones. Fig. 12 (Insert [11] 1) [12] shows the world distribution of fold mountains, active volcanoes and earthquake zones. Use Fig. 12 to outline the pattern of distribution of fold mountains, active volcanoes and earthquake zones in the world.
- Fig. 5 (Insert) shows the world distribution of fold mountains, active volcanoes and earthquake zones.

[5]

~~Use Fig. 5 to outline the pattern of distribution of fold mountains, active volcanoes and earthquake zones in the world.~~

Use Fig. 12 to describe the distribution of old mountains, active volcanoes and earthquake zones in the world.

[5]

- Fold mountains are commonly found along convergent plate boundaries[13], where plates move towards each other and buckle and fold. It can be seen in the map that these fold mountains can be found along the western coastline of North and South America, as well as in Southern Asia and Europe
- Alongside these fold mountains, active volcanoes and earthquake zones are also found at these same locations as well
- However, the major volcanoes are also found along the Pacific Ring of Fire, along the Pacific plate, which also includes the eastern coastline of Asian and Australia as well. Accompanied with these volcanoes are also the earthquake zones.
- There are also some major volcanoes such as Mauna Loa and Kilauea which are found off the shoreline and in oceans, and there are some volcanoes also found in the Atlantic ocean
- Additionally, there are some fold mountains found at the eastern end of Russia which are not associated with major volcanoes and earthquake zones
- Max 3m if student just lists information without comparing across fold mountains, volcanoes and earthquake zones
- Accept answers if students include descriptions using plate boundaries as well as continents. Do not penalize if students only use continents in their descriptions.

(d) (ii)

Fig. 133 (Insert [14] 1) is an online advertisement for The Kimberley Mine Museum in South Africa.

Using Fig. 12, describe and explain how living near volcanoes has benefitted the people living in Northern Cape Province, South Africa. [4]

~~Fig. 6 (Insert) is an online advertisement for The Kimberley Mine Museum in South Africa.~~

~~Describe and elaborate how living near volcanoes has benefitted the people living in Northern Cape Province, South Africa.~~

- The people living in Northern Cape Province have benefitted from the extraction of precious stones such as diamonds that were extracted from volcanic rocks after millions of years
- The diamonds were mined from the volcanic rock, and refined to make diamonds as industrial tools, used in scientific research as well as to make jewellery
- Additionally, the Kimberley Mine was also converted into a museum to draw in tourists after the mine turned defunct
- The museum is rich in history and tourists are drawn in to visit the site to learn more about their history

(ed 'Emergency drills have greatly reduced impacts from earthquakes.'
)

To what extent do you agree with this statement? Give evidence to support your answer. [8]

People may respond to earthquakes in several ways:

- Preparedness measures
 - Land use regulation
 - Infrastructure
 - Emergency drills
 - Earthquake and tsunami monitoring and warning systems
- Short-term responses
 - Search and rescue
 - Emergency food and medical supplies
- Long-term responses
 - Rebuilding of infrastructure
 - Provision of health care

Evaluation:

Emergency drills are largely essential to ensure that a population is amply prepared for a potential earthquake, and would know what to do to minimise the number of lives lost, as well as any other infrastructural or social impacts brought about by the natural disaster. However, these drills are only contextualised to the latest earthquake event, and may not be sufficient to minimise the damage inflicted should the next earthquake event be of a higher magnitude than the drills that are currently implemented. Thus, a combination of preparedness measures, as well as long term plans to rebuild and improve on their infrastructure would ensure minimal loss to a population.

Level 1 (0-3 marks)	Level 2 (4-6 marks)	Level 3 (7-8 marks)
At this level, answers will be	At this level, answers will be	At this level, answers will be

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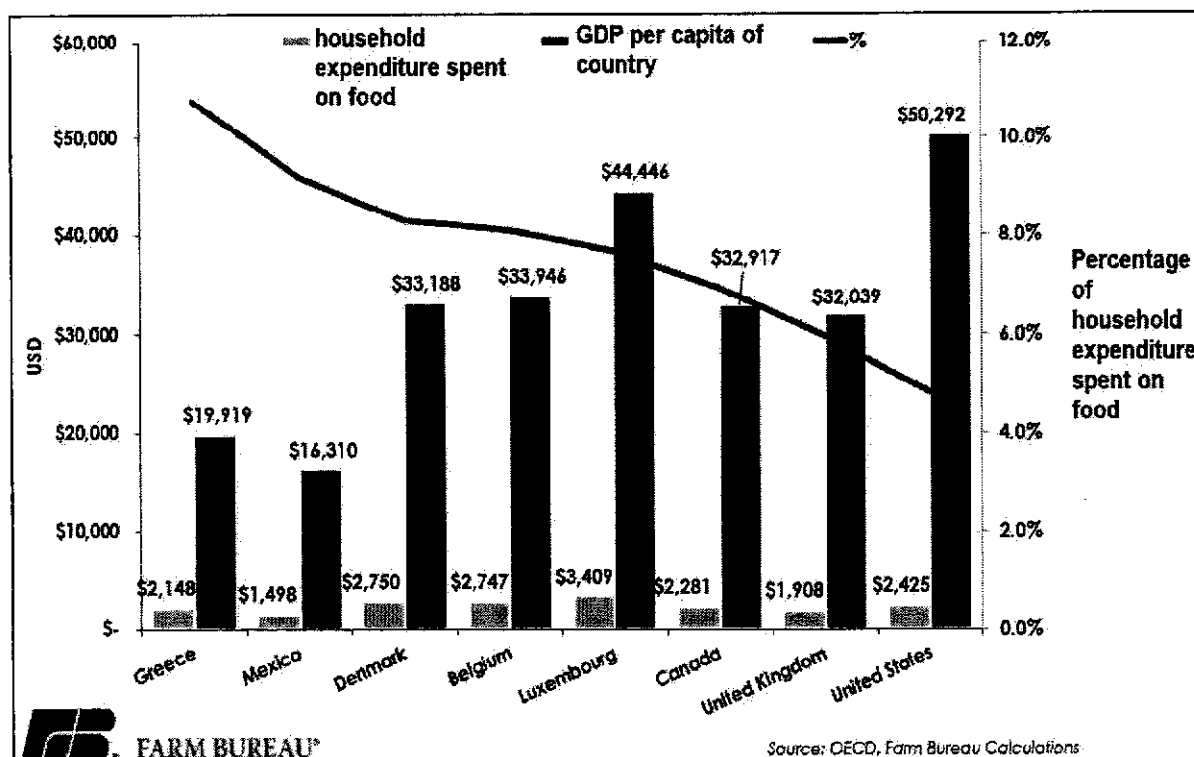
OVERALL		
<ul style="list-style-type: none"> • Generalised statements that are not supported • Basic answer with little or no development • Naming of (factor or factors) • Brief description(s) • Lacking in detail • Too narrow in scope of content/example 	<ul style="list-style-type: none"> • Some appropriate detail • Answer is not full • Lack some relevant detail 	<ul style="list-style-type: none"> • Detailed response • Comprehensive • Supported by sound knowledge
ASSESSMENT		
<ul style="list-style-type: none"> • No stand is given • No or little attempt at assessment is made 	<ul style="list-style-type: none"> <input type="checkbox"/> Lack balance <input type="checkbox"/> Lopsided/one sided assessment <input type="checkbox"/> Attempt at assessment <input type="checkbox"/> Assessment is limited/general in nature 	<ul style="list-style-type: none"> <input type="checkbox"/> Balanced <input type="checkbox"/> Assessment of 'extent/how far' <input type="checkbox"/> Assessment is directly related to/relevant to factors <input type="checkbox"/> Make a case
SUBSTANTIATION		
<ul style="list-style-type: none"> • With minimal support • An example may or may not be given 	<ul style="list-style-type: none"> <input type="checkbox"/> Support is patchy <input type="checkbox"/> Place-based/Located/Country example is given <input type="checkbox"/> An example is given to support answer in at least one place in the answer 	<ul style="list-style-type: none"> • Support with evidence (i.e. examples) can be found in most places • Place-based/Located/Co untry example is given
REASONING & EXPRESSION		
<ul style="list-style-type: none"> • Reasoning is weak • Expression is unclear 	<ul style="list-style-type: none"> <input type="checkbox"/> Good reasoning and logic in parts <input type="checkbox"/> Good expression in some places 	<ul style="list-style-type: none"> <input type="checkbox"/> Reasoning is clear <input type="checkbox"/> Good expression of language

- 6 (f) Study Fig. 14, which shows a graph on the amount of household expenditure spent on food, GDP per capita of the country and the percentage [4]

Describe the extent to which the percentage of household income spent on food is influenced by the GDP per capita of a country.

Fig. 14 for Question 6

A graph on food expenditure, disposable income of countries and percentage of household expenditure spent on food



Source: OECD, Farm Bureau Calculations

Source: <https://www.fb.org/market-intel/u.s.-food-expenditures-at-home-and-abroad>

- The percentage of household income is largely influenced by the GDP per capita of the country. As the GDP per capita of the country increases, the percentage of the household expenditure spent on food decreases
- This can be seen in countries like USA, in which it has the highest GDP per capita of 50,292 USD. Likewise, it has the lowest percentage of household expenditure on food, with only 4.8% spent.
- Conversely, countries with lower GDP per capita like Greece and Mexico, with 19,919 USD and 16,310 USD respectively, have the highest percentages spent on food, with 11% and 9% respectively
- However, there is an anomaly – Luxembourg has the second-highest GDP per capita of 44,446USD, however, it still has a relatively higher percentage spent on food, with 7.8% spent on it.
- Cap at 2m if not data used