Year 9-10 Geography – Coral Reef Unit

**INSTRUCTIONS – Please read carefully before you start**

**Answer the following questions from *Geography Focus 1, Stage 4* (Green Book). If you can’t get a hard copy of this book, there are scans of the relevant pages on the Haiku page.**

**When you have downloaded this document from Haiku, the first thing you should do is ‘Save As’. Save it somewhere you can find it, call it something you’ll remember, and share it with me on OneDrive, even before you’ve written any answers. That way I can easily check your progress.**

**Please do NOT waste time hand-writing your answers or re-typing out all the questions on a separate word document.**

**Use the green book to find the answers but put them into your own words where possible (sometimes the answer is numbers/data and cannot be in your own words).**

**Unit 4.1 – Coral Reefs, Rainforests of the Sea (pg. 82-85)**

1. What percentage of the world’s oceans are coral reefs located in?
2. List five reasons why coral reefs are important.
3. What percentage of marine fish species live in coral reefs?
4. Explain the 3 environmental factors that influence the global location of coral reefs.
5. Why do reefs only grow to a depth of 25-30 meters?
6. Explain why coral reefs do not grow above the mean tide level.
7. Why are reefs not found where rivers enter the ocean?
8. Why are coral reefs called ‘rainforests of the sea’?
9. What percentage of the world’s coral reefs are under threat from human activities? Make a list of the human activities that are placing coral reefs at risk.
10. Look at Table 4.4 on page 85 and answer True or False:
	1. The Philippines has more coral reefs than the Marshall Islands.
	2. Papua New Guinea and Fiji have a larger combined reef area than the Philippines
	3. Indonesia and Australia have a greater percentage of coral reefs than all the other nations of the world combined.
11. Construct a pie graph that shows the share of the reef area for countries around the world.

**Unit 4.2 – Coral Reefs, Plant or Animal? (pg. 86-87)**

1. What is zoonxanthellae and why is it important to coral reef ecosystems?
2. What are coral polyps and what do they feed on?
3. What material is the coral polyp’s skeleton made of and why is this important for reef building?
4. What is a symbiotic relationship?
5. Explain the symbiotic relationship between coral polyps and zooxanthellae and describe how important his is to coral reefs.
6. How are calcium carbonate and coral type linked?
7. Compile a table to show the comparison between hard and soft corals using these headings: Features, Polyp, tentacles, Brief Description. Include a sketch of each type in your table *(NO copy/pasted pictures. You may use MS Word drawing tools or MS Paint, or just print out & draw on the hard copy.)*

**Unit 4.3 – Coral Reef Formations (pg. 88-89)**

1. According to scientists, how old are the coral reef ecosystems that exist today?
2. Name two environmental changes that today’s coral reefs have to adapt to.
3. Name and describe the four main types of coral reefs.
4. What are coral cays and what are they made of?
5. Explain the steps in the formation of a coral cay.
6. What limits the growth of the vegetation on a coral cay?
7. Draw an annotated (labeled) diagram to explain the features of the following types of coral reefs:
8. Fringe reefs
9. Coral atoll
10. Barrier reef
11. Patch reef

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**Unit 4.4 – Animals of the Coral Reef Environment (pg. 90-91)**

1. Where does the anemone live on coral reefs? Explain one way the anemone is different to the coral polyp.
2. Describe how the anemone catches its food.
3. Why is the mucous coating on the anemone’s tentacles an important adaption to life on the reef?
4. Explain how one other animal on the reef benefits from the mucous coating on the anemone’s tentacles.
5. Explain why the relationship between the clown fish and the anemone is symbiotic.
6. Describe the physical features of the parrot fish.
7. What would happen to the coral reef if parrot fish were removed?
8. Describe one adaption of the seahorse that protects it from predators.

**Unit 4.5 – Human Threats to Coral Reefs (pg. 92-93)**

1. How does the trend for people to have hobby aquariums impact on coral reefs?
2. Why is cyanide used to catch ornamental fish for the aquarium trade? What impact does it have on the reef?
3. What is meant by overfishing of fish stocks? What impact does this have on the coral reef environment?
4. Describe two impacts tourists have on coral reefs.
5. Why is there a need for careful management of urban developments located next to coral reefs?
6. List three activities that can lead to soil erosion. How does eroded soil travel to coral reefs?
7. What impact does sediment from rivers have on coral reefs?
8. List the four main causes of coral reef destruction.
9. Look at chart 4.20 on pg. 93 and answer the following questions:
	1. What percentage of coral reefs are considered to be at high risk of destruction
	2. Which category of risk to coral reefs presents the greatest overall threat?

**Unit 4.6 – The Great Barrier Reef (pg. 94-96)**

1. Describe the spatial dimensions of the Great Barrier Reef.
2. Name the three types of coral reefs that form the Great Barrier Reef Marine Park.
3. Why is the Great Barrier Reef a globally significant environment?
4. Give four examples that highlight the level of biodiversity found in the Great Barrier Reef.
5. What is the total estimated value of the Great Barrier Reef to the Australian economy?
6. Describe four ways that the Great Barrier Reef is considered to be of value to the Australian people.
7. What activity did a royal commission investigate for the Great Barrier Reef between 1970 and 1974? Why do you think the royal commission recommended against the activity?
8. What was the outcome of the royal commission in 1975 and what impact did this have on the management of the Great Barrier Reef system?
9. When was the Great Barrier Reef added to the World Heritage list? Give two reasons why you think it was added to the list.
10. Construct a two-column table titled “Groups who use the Great Barrier Reef.” Name the left hand column “User Group” and the right column “Impacts.” Use the information in the concept map in 4.25 to write a brief description of the was these groups impact the reef.
11. Explain why the management of activities within the Great Barrier Reef area is such a complex task.

**Unit 4.7 – Natural Threats to Coral Reefs (pg. 98-99)**

1. What is another name for the intense tropical storms that cause damage to coral reefs? Describe why these storms are so destructive to the reef.
2. Read the newspaper article and study the synoptic chart in figure 4.29 (on page 98)
	1. how many coral reefs were damaged by the cyclone?
	2. Name the seven types of cyclone damage to reefs the researchers investigated.
	3. What role will the surviving corals play in repairing the damage to the reef caused by the tropical cyclone?
	4. What was the wind speed and wave height caused by the cyclone? Why would these have caused damage to the coral reef?
	5. Compare the date when Tropical Cyclone Ingrid formed over the Great Barrier Reef and the date the newspaper article was written. Explain why they are different.
	6. Estimate the air pressure on 8 March at Cairns, Townsville, Mackay, Aurukun, Cardwell, St Lawrence and Yeppoon.
	7. Estimate the latitude and longitude of Tropical Cyclone Ingrid on 8 March 2005
3. Name the three sources of nutrients that are believed to cause the outbreaks of the crown-of-thorns starfish.
4. Describe how increased nutrients in seawater are believed to cause an increase in the crown-of-thorns starfish numbers.
5. Describe the way the crown-of-thorns starfish eats the coral polyps.
6. Refer to figure 4.28 (on page 98)
	1. what was the total outbreak of the crown-of-thorns starfish in 1992, 1998 and 2002?
	2. Which year did the total outbreak have the least impact on the reef?
	3. Which year did the total outbreak have the greatest impact on the reef?
	4. Rank the years in order from greatest percentage of the reefs affected to least percentage of the reefs affected in terms of the total outbreak of the crown-of-thorns starfish.

**Unit 4.8 – Global Warming – The End of Coral Reefs? (pg. 100-101)**

1. What two impacts of global warming threaten coral reefs?
2. Why is water temperature important to coral reefs? How does a change in it destroy the reef ecosystem?
3. What will be the end result of global warming on coral reef ecosystems?
4. How long is it predicted to take before global warming affects all coral reefs?
5. Describe the impact global warming will have on island communities of the Pacific Ocean.
6. In what way will global warming cause tropical cyclones to have a greater impact on coral reefs?
7. What activity creates the most greenhouse gasses? What is likely to happen io this pollution source in the future?
8. Refer to figure 4.32 (on page 100)
	1. what is the relationship between the temperature change graph and the methane and carbon dioxide gas graphs?
	2. Approximately how many thousands of years ago was the first rise in sea level?
	3. What is the trend for the temperature graph over the past 100 years? Do you expect this trend to continue?
	4. What relationship exists between sea level, temperature change and increases in methane and carbon dioxide?

**Unit 4.9 – Coral Reef Destruction: A Global Issue (pg. 102-103)**

1. At what scale does the United Nations act to protect coral reefs?
2. Describe how global conventions help protect coral reefs
3. Describe one way that countries can act to help protect coral reefs.
4. What are NGOs? List three forms of actions they may organize to protect coral reefs.
5. Read the snapshot (on page 103).
	1. describe the location and size of the Northwestern Hawaiian Islands National Monument marine park.
	2. What types of marine species will be protected by the creation of the marine park?
	3. What activities have been banned from the park?