

Coral Polyps and Coral Reefs

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Grade Level: 3rd- 5th



Coral Polyps and Coral Reefs

Rational: The 3rd – 5th grade student will learn about coral polyps and coral reefs. They will study where coral lives, what it eats, why coral is important and the threats to coral reefs.

Goal: Students will learn about coral and decide whether coral is a rock, plant, or animal.

Grade Level: 3rd- 5th

Subject: Science

Topic: Coral Polyps and Coral Reefs

Lesson Object: Given information about coral polyps and coral reefs, the 3rd- 5th grade student will decide if coral is an animal, plant, or rock.

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SC.A.2.2.1: The student knows that materials may be made of parts too small to be seen without magnification.

SC.A.1.2.5: The student knows that materials made by chemically combining two or more substances may have properties that differ from the original materials.

SC.B.2.2.1: The student knows that some source of energy is needed for organisms to stay alive and grow.

SC.B.2.2.2: The student recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy.

SC.D.1.2.1: The student knows that larger rocks can be broken down into smaller rocks, which in turn can be broken down to combine with organic material to form soil.

SC.D.1.2.4: The student knows that the surface of the Earth is in a continuous state of change as waves, weather, and shifts of the land constantly change and produce many new features.

SC.D.1.2.5: The student knows that some changes in the Earth's surface are due to slow processes and some changes are due to rapid processes.

SC.D.2.2.1: The student knows that reusing, recycling, and reducing the use of natural resources improve and protect the quality of life.

SC.F.1.2.3: The student knows that living things are different but share similar structures.

SC.G.1.2.1: The student knows ways that plants, animals, and protists interact.

SC.G.1.2.5: The student knows that animals eat plants or other animals to acquire the energy they need for survival.

SC.G.1.2.7: The student knows that variations in light, water, temperature, and soil content are largely responsible for the existence of different kinds of organisms and population densities in an ecosystem.

SC.G.2.2.1: The student knows that all living things must compete for Earth's limited resources; organisms best adapted to compete for the available resources will be successful and pass their adaptations (traits) to their offspring.

Materials:

- Colored paper size 8½ x 11
- Stapler
- Colored pencils
- Overhead projector
- Overhead transparency

Procedures:

- Ask students to discuss any prior knowledge that they have about coral.
- Pass out the worksheet titled, "You are the scientist and you must decide?" (This can be found in Appendix A following this lesson.)
- Read the directions and definitions with the students.
- On a separate sheet of paper have the students answer the question.
- Ask the students to share their answers.
- Explain to the students that as scientist we are going to research coral to see if our hypotheses are correct.
- Have the students make a layered foldable, which they will use to record their notes. (Directions can be found in Appendix B)
- Have the students label the 1st layer or tab, Coral.
- Place the first overhead on the projector. (Overheads can be made from the master pages found in Appendix C.)
- Have the students label the second tab "What is coral?"
- Read through the information on the first topic and have the students record notes on the second layer of their foldable.
- Repeat with each heading on the overheads. (This can be done over several days.)
- After all of the overheads are presented and the students notes complete, have the students again look at the hand out titled, "You are the scientist and you must decide?" This can be the assessment of what the students have learned.

Assessment:

- The 3rd-5th grade student will answer the question, "Is coral a rock, a plant, or an animal?" The student will be assessed on how the answer is supported with examples.

Appendix A

Student Handout

You are the scientist and you must decide?

Is coral a rock, a plant, or an animal?

Rock:

1. A naturally formed aggregate of mineral matter constituting a significant part of the earth's crust.
2. A lump of hard consolidated mineral matter; material consisting of the aggregate of minerals like those making up the Earth's crust

Plant:

an organized living being, generally without feeling and voluntary motion, and having, when complete, a root, stem, and leaves, though consisting sometimes only of a single leafy expansion, or a series of cellules, or even a single cellule.

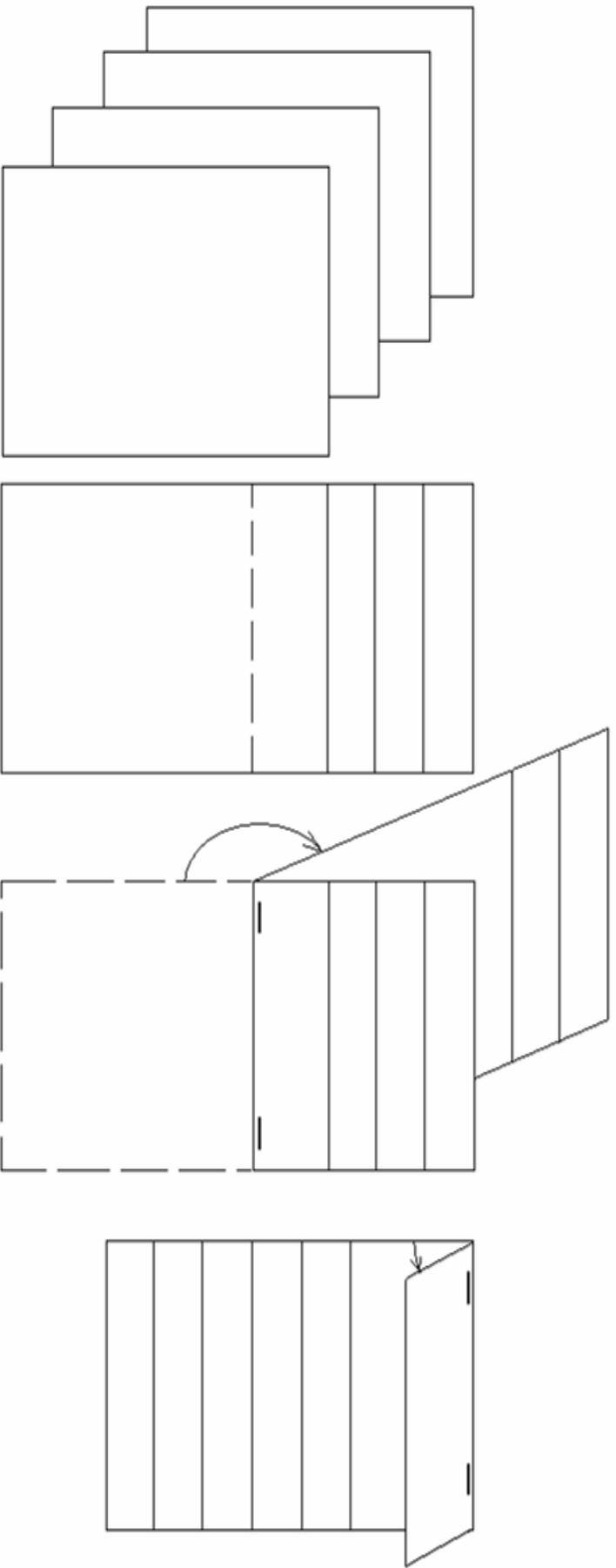
Animal:

1. A living organism characterized by voluntary movement.
2. Response to stimuli, restricted growth, and fixed bodily structure.

Use only what you already know and the definitions above to answer the above question and defend your answer.

Appendix B

Foldable Instructions



1. Stack 4 sheets of 8 ½ x 11 paper so that the backsheet is about ¾ of an inch higher than the sheet in front.

2. Bring the bottom of the 4 sheets upward and align the edges so that all of the layers or tabs are the same distance apart.

3. When all tabs are an equal distance apart, fold the papers and crease well. Staple along the fold.

Appendix C

Overhead Masters

Let's learn about coral!



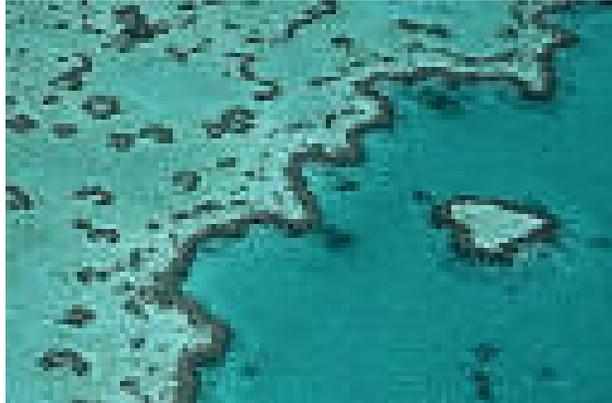
What is coral?

- Coral is a small, fragile animal which is actually named coral polyps.
- There are hundreds of species.
- There are two classifications of coral, "hard coral" and "soft coral".
- Coral ranges in size from the size of a pin head to a foot in diameter.
- They are invertebrates (spineless).
- Coral polyps have sac like bodies with mouths that are encircled with tentacles called cnidae.



Where do corals live?

- Hard corals live in colonies called reefs.
- It takes millions of coral polyps to form a reef.
- Some coral reefs are 50 million years old.
- Coral reefs grow best in warm water. (21-29 degrees Celsius or 70-85 degrees Fahrenheit.)
- Hard coral grows its' skeleton from calcium carbonate or limestone found in saltwater.
- The skeleton will eventually become a rock when the coral polyp dies.
- Coral prefers clear, shallow saltwater because it likes the sunlight.
- Hard coral polyps build new skeletons on top of old limestone coral skeletons. This creates coral mounds.
- Coral reefs are created in a variety of shapes and sizes.
- Some corals form hard pointed shapes and others build soft rounded shapes.
- The size of a wave in an area can affect how the coral reef is formed.
- Soft coral grows wood-like cores that support its body.



How many types of reefs are there?

- There are four types of coral reefs.
- The type of reef that hard coral builds depends on the location of the reef.
- Fringing reefs form along the coastline on the continental shelf.
- Barrier reefs grow parallel to the shoreline but further out than the fringing reefs.
- Coral Atolls is another type of reef which grows in rings on top of sunken volcanoes.
- Patch reefs are small and grow between fringing and barrier reefs.



What do coral polyps eat?

- Some species of coral are carnivores and eat zooplankton.
- These carnivores use their tentacles to catch zooplankton.
- Other species gain nourishment from algae (zooanthellae) that lives in the coral reef.

Does coral have a predator?

- They are eaten by large starfish.



Why are coral reefs important?

- Coral reefs are a natural buffer for shorelines and help protect the shoreline against strong storms.
- Coral reefs are home to thousands of species.
- Skeletons of coral reefs supply sediments that help to create beaches.
- Several important life saving medications have been developed from chemicals found in coral reef organisms.

What are the threats to coral reefs?

- Water pollution is the leading cause of damage to coral reefs. (Oil, gas, and pesticides.)
- Construction along coastlines cause sediment to cover and smother coral reefs.
- Over fishing a coral reef can damage the reefs food web which can lead to permanent damage.
- Coral mining is another problem. (Mined for; souvenirs, jewelry, and for making road base and bricks.)
- People are a threat. (Careless boating, diving, snorkeling, and walking on the reef can cause damage.)
- Global warming.

