

Coral Reef Adventure

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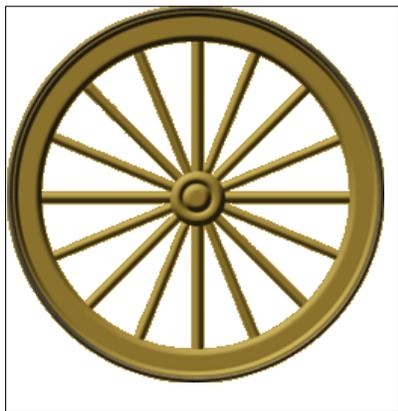
Are Corals Animals, Vegetables or Minerals

Some **corals** are hard and resemble rocks, others are soft. However, both hard and soft corals photosynthesize, which led early scientists to classify corals as plants. Even today, many students are surprised to find that corals belong to the Phylum **Cnidaria**, a unique group of **invertebrate** animals. This phylum of stinging animals can be further divided into three classes:

Hydrozoa, the hydroids;
Scyphozoa, the jellies; and
Anthozoa, the corals and sea anemones.

While Cnidarians are very diverse, they share some common defining characteristics. All Cnidarians have the ability to sting (Cnidaria is Greek for nettle). Cnidarians have a ring of specialized tentacles surrounding a central opening (both mouth and anus) for stinging and capturing prey, as well as for fending off predators.

The cnidarian's body form is simple, and can exist in either a polyp or medusa shape. The polyp body shape, like a sea anemone, as a cylindrical hollow tube. The medusa body shape-- as seen in jellies-- is free floating, umbrella-like in form with the oral side and tentacles dangling down. Regardless of the body shape, Cnidarians are radially symmetrical. This means that all of their parts are arranged around a central axis similar to the spokes of a wheel.



Coral Reef Adventure Tank
MOST
Syracuse, NY



Sea Anemone
Monterey Bay Aquarium
Monterey, California



Dancing Jellyfish
Melbourne Aquarium
Melbourne, Australia

MOST*

VOCABULARY

Anthozoa
Cnidaria
Coral
Hydrozoa
Invertebrate
Scyphozoa

HELPFUL TERMS

Calcium carbonate structure
Polyp
Tentacles
Zooxanthellae

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New York State Standards

Middle School Activity

Standard 1:
Key Idea 1: S1.1b

Standard 4:
Key idea 1: 1.1a, 1.1b, 1.1c, 1.1d, 1.1f; Key idea 3: 3.1a, 3.1e, 3.1g, 3.1h, 3.1i; Key Idea 5: 5.1b, 5.3a; Key Idea 6: 6.1s, 6.1e, 6.1g, 6.3g

Standard 7:
Key Idea 2: Gathering and processing information

Activity: Coral Reef Reader's Theatre

MATERIALS NEEDED

Resources for research
i.e. laptop, library access

Students should be able to:

Describe four aspects of their coral reef creature or environment

Read out loud their mini-report about their coral reef creature or environment

Understand the diversity of a coral reef

What to do:

Divide the class into groups of four people. Each group will be assigned either a type of coral, an organism found in the coral, or a part of the coral to research. Groups will need resources to answer their questions.

Types of Coral Reefs Groups

Assign one person in each group to one of the four listed types: **atolls, barrier reefs, fringing reefs, patch reefs.**

For each question, insert your type of reef in the blank.

1. What is a _____?
2. What is unique about the _____?
3. One or two facts you did not know about the _____.
4. What does it eat, or how does it get its energy?

Parts of a Coral Reef Groups

Assign one person in each group to one of the four listed parts: **calcium carbonate structure, polyps, tentacles, zooxanthellae.**

For each question, insert your part in the blank.

1. What is the job of this part of coral?
2. Explain one or two facts that you did not know about the _____.
3. Where is/are the _____ found?
4. Is it the animal, plant or non-living part of the coral?

Organisms of a Coral Reef Groups

Assign one person in each group to one of the four listed organisms: **echinoderms, mollusks, sponges, turtles.**

For each question, consider your type of organism.

1. Explain this type of organism.
2. How does it eat? And What does it eat?
3. How does it move around?
4. One to two other interesting facts about this organism.

Activity: Coral Reef Reader's Theatre

MATERIALS NEEDED

Resources for research
i.e. laptop, library access

Students should be able to:

Describe four aspects of their coral reef creature or environment

Read out loud their mini-report about their coral reef creature or environment

Understand the diversity of a coral reef

Writing Directions

1. Write one to three sentences answering each of the questions listed on their group topic.
2. Exchange papers and assist with a peer edit of the work provided.
3. Make a final version of the writing piece.
4. Practice reading the writing piece.
5. Practice reading all four pieces in a group, like a circle story.
6. Present the readings with the topic titles for the whole class to hear.
7. Collect the papers, and provide notes to the class based on everyone's work.
8. Have a discussion about the types of coral, parts of a coral, and coral diversity.

Activity: Can You Eat a Reef?

MATERIALS NEEDED

Water
Pyrex measuring cup
Toothpicks
Paper Plates
Candy sprinkles
Large marshmallows
Licorice whips (thin)
Candy coating
Candy melts or bakers chocolate
Microwave
Napkins

Students should be able to:

What to do:

Arrange students in teams of two or three. Give each team a paper plate. Ask students to write their names on the outer top edge of the plate. This plate will represent the group's hard substrate, the place where coral grows. Give each student another paper plate as a working surface as they create the edible coral.

Students need to wash their hands before working with the following items; eating of items is allowed only after the activity is completed!

1. You will receive one marshmallow and a toothpick. The marshmallow represents the body of the coral polyp and the toothpick will be used to make openings for the tentacles that surround the central opening at the top.
2. Make six holes in the top of the marshmallow, indicating where the tentacles will go later in the activity.
3. You will receive ½ ounce of melted chocolate on your plate. Carefully roll your marshmallow in the candy coating covering the outside of the polyp body. Be careful not to fill the holes where the tentacles will be attached. The chocolate coating represents the hard calcium carbonate that creates the skeleton on the coral reef.
4. Next, dampen the sides of the marshmallow with water, and dust candy sprinkles on the sides of the marshmallow. The sprinkles represent the living zooxanthellae (helping algae) in the coral's tissues.
5. Take the 6 licorice whips; using the toothpick, carefully insert them into the pre-poked holes in the top of the marshmallow. The licorice whips need to be inserted firmly so they do not fall out. The licorice whips represent the tentacles of the coral belonging to the Phylum Cnidaria.
6. Place your marshmallow on the team's paper plate, close enough that they could fuse together. This represents what happens as the calcium carbonate skeleton is formed. Discuss your coral reef with your teammates. What do each of the parts of the coral do to protect it? How can the other corals located around it help them all to survive?
7. Finally ask the students to pretend that they are predators (such as a parrotfish) on a coral reef, and ask them to eat the corals they created!

Activity Teacher Notes:

Can You Eat a Coral Reef?

This activity can be done as a demonstration if students cannot eat the finished product. If students are allowed to eat their creations; be sure they wash their hands before beginning the project, and that clean utensils are used during the activity. Also remind the students that no one is allowed to handle anyone else's candy, since they may be eating it. Candy melts are sold at cooking and craft stores that sell candy making equipment. Candy melts are ideal for this activity because they melt quickly and uniformly. Other types of chocolate can be used for this activity, but make sure the chocolate used melts uniformly. Use the Pyrex measuring cup to melt the chocolate. It will be helpful to stir the chocolate as it melts. Use caution when assisting students as they roll their marshmallows in the warm chocolate.

Pictures are available in the Coral Reef Adventure Educators Guide, which can be downloaded from the Educator's Toolbox at the MOST website: www.most.org.