ROCKY SHORE ECOSYSTEM ASSESSMENT

Topic

Rocky Shore Ecosystem, Assessment

Duration

One session

OCEAN LITERACY PRINCIPLES

OLP 1, OLP 2, OLP 3, OLP 4, OLP 5, OLP 6

Focus Question

What have you learned about the rocky shore ecosystem?

Overview

Students apply the knowledge they have acquired throughout the Rocky Shore Marine Science Curriculum: An Ecosystem Unit for Elementary Educators by solving a variety of problems on an assessment.

Objectives

Students will be able to:

- ★ Demonstrate the knowledge they have acquired from their participation in a rocky shore marine science unit

Materials Needed

- ★ Copies of the Rocky Shore Ecosystem Assessment (one per student, pages 218–221)

Teacher Preparation

1. Make copies of the Rocky Shore Ecosystem Assessment (one per student).
2. Prepare enough sharpened pencils and scratch paper for each student to use during the assessment.

Background

The Rocky Shore Marine Science Curriculum: An Ecosystem Unit for Elementary Educators is comprised of twenty-four lessons. The twenty-third lesson is the assessment, and the twenty-fourth lesson is a preparatory lesson for classrooms planning on visiting the rocky shore. Only students who have participated in lessons one through twenty-two should be taking this assessment.

Teacher Tips

- ★ Do not let reading or writing become a hindrance to students from demonstrating what science knowledge they know. Allow students who need writing assistance to have scribes, and read anything students would like read aloud from the assessment.
- ★ Consider having students choose reasonable areas in the classroom where they would prefer to take the assessment.
- ★ Providing students with brief stretching or breathing exercises during the assessment could benefit them greatly.

Extension Suggestion

- ★ Have students participate in an activity that enables them to demonstrate the knowledge they have gained from the rocky shore ecosystem unit in an alternative way to a paper and pencil assessment. This could include making a poster, making a podcast, writing a letter, drawing a comprehensive illustration, etc.

Procedure

Part One

1. Have students participate in a brief movement activity before taking this assessment. Gonoodle.com is one valuable resource where you can find short, productive movement activities for students.
2. Have students find a silent reading book to keep at their seats for when they have finished the assessment.
3. Hand out sharpened pencils and scratch paper for students to use during the assessment.
4. Explain to students that they are going to be taking an assessment that reviews facts that they have learned during their rocky shore ecosystem unit.
5. Encourage students to do their best, and inform them that if they come to a question they are not sure how to answer, that they should answer that question to the best of their abilities and move on to the next question.
6. Explain to students that you can read questions or parts of questions to them if they need assistance with the reading.
7. Explain to students that you cannot help them answer questions or provide them with the definitions to any vocabulary.
8. Inform students that if they have any questions or need to use the restroom during the assessment that they are to raise their hands and wait for the teacher.
9. Inform students that when they complete their assessment they are to raise their hands, wait for the teacher to collect their assessment, and then read silently until all assessments are completed or until the teacher stops the assessment time.

Part Two

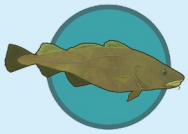
10. Pass out the assessments to each student and have them begin.
11. Provide movement breaks for students during the assessment if necessary.
12. Collect all of the assessments and resume normal class studies.

Wrap-up

- ★ Review all of the questions with students when all assessments are completed.
- ★ Ask students if they feel they have learned a lot about the rocky shore ecosystem.

Books

- ★ *The Big Test* by Julie Danneberg
- ★ *Testing Miss Malarkey* by Judy Finchler



Websites

- ★ Have students check out the video titled "A Pep Talk From Kid President to You" on the SoulPancake YouTube Channel before the test.
- ★ Have students watch the video titled "Test-Taking Tips Movie" on the drseverson YouTube Channel before the test.

Scientist Notebook

- ★ Students can record the answers to the questions from the assessment they answered incorrectly.

Wrap-up (continued)

★ Ask students if there are other things they would like to know about the rocky shore ecosystem and take a list of their requests. Provide students with the knowledge they were requesting if possible at a later time.

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Name: _____

Date: _____

Multiple Choice

Read the following questions carefully and fill in the circle of the best possible answer.

1. What percent of the earth's crust is covered by the ocean?

   (A) 41%
   (B) 71%
   (C) 91%
   (D) 11%

2. A watershed is . . .

   (A) an area of land in which all water flows down into a common basin.
   (B) an area of water in which all water flows down into a common ocean.
   (C) an area of water in which all land flows down into a common ocean.
   (D) an area of land in which all water flows down into different basins.

3. A community of interacting organisms and their environment is called an . . .

   (A) environment.
   (B) estuary.
   (C) ecosystem.
   (D) entrance.

4. A rocky shore ecosystem has the following:

   (A) sand, rivers, plants, and insects.
   (B) rocks, lakes, algae, and no animals.
   (C) sand, pools of water, algae, and lizards.
   (D) rocks, pools of water, algae, and animals.

5. Wind, earthquakes and tides can all help form...

   (A) changes in water temperature.
   (B) changes in salinity.
   (C) waves.
   (D) predators.

6. The rise of ocean levels twice a day and the fall of ocean levels twice a day are called . . .

   (A) tides.
   (B) currents.
   (C) waves.
   (D) ecosystems.

Matching

Write the letter of the fact next to the correct rocky shore zone.

7. Splash zone ____
8. Upper intertidal zone ____
9. Middle intertidal zone ____
10. Lower intertidal zone ____
11. Subtidal zone ____

A. This zone is always under water.

B. This zone is under water except for extreme low tides.

C. This zone is under and above water almost equal amounts of time.

D. This zone is above water except for high tides.

E. This zone only gets wet from rain, spray from waves, and during strong storms.

Fill-in-the-Blanks

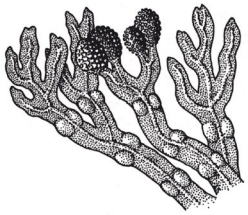
Read each sentence carefully and fill in the blanks with the correct answer from the word box.

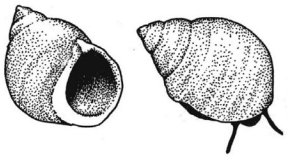
exoskeleton	absorb	tide pools	masking
moon	herring gull	camouflage	adaptation

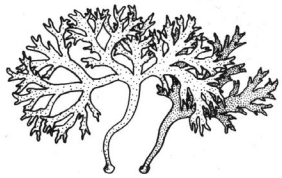
12. The main cause of the tides is the gravitational pull from the _____.
13. As the sun shines on the rocky shore, the water and rocks _____ the heat.
14. A body part or a behavior that helps a living thing survive in its environment is called an _____.
15. _____ _____ are shallow bodies of saltwater that are left behind when the tide recedes.
16. The _____ _____ is a shorebird that is an omnivore, and eats almost anything including mussels, crabs, sea urchins, eggs, and garbage.
17. _____ is the use of materials or coloration for concealment.
18. _____ occurs when an animal uses something in its environment to hide itself.
19. Most crabs are covered with a thick shell called an _____.

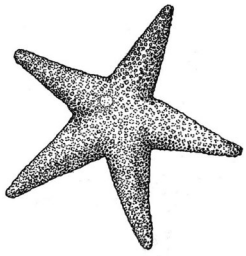
Picture Identification

Write the letter of the algae or animal name next to the correct picture.

20. _____ 

21. _____ 

22. _____ 

23. _____ 

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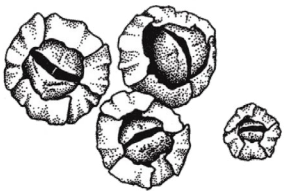
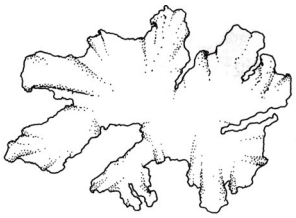
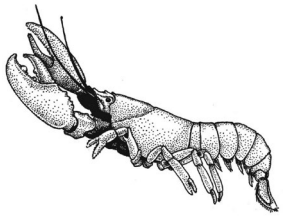
25. _____ 

26. _____ 

27. _____ 

a. barnacles

b. sea star

c. sea lettuce

d. knotted wrack

e. rockweed

f. periwinkle

g. lobster

h. Irish moss

Problem-Solving

Read the following questions carefully and answer them with as much information as possible.

28. There are different types of fish that live in the subtidal zone of the rocky shore such as the rock gunnel, the mummichog, and the lumpfish. What are three different traits of fish?

_____

_____

_____

_____

Problem Solving (continued)

29. There are two types of plankton: phytoplankton and zooplankton. Plankton, microscopic organisms drifting in the ocean, are very important. Provide at least two reasons why plankton are very important.

30. Algae and plants are not the same thing. Explain how algae and plants are alike, and how they are different.

31. The rocky shore ecosystem is a harsh environment. What are three of the challenges rocky shore organisms need to overcome so they can survive?

32. A rocky shore organism lives most of its life in the middle intertidal zone. This zone is under water about half of the day and above water about half of the day. Name at least two kinds of adaptations that would help an organism survive the middle intertidal zone.

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Answer Key

Multiple Choice

1. b
2. a
3. c
4. d
5. c
6. a

Matching

7. e
8. d
9. c
10. b
11. a

Fill-in-the-Blanks

12. moon
13. absorbs
14. adaptation
15. tide pools
16. herring gull
17. camouflage
18. masking
19. exoskeleton

Picture Identification

20. e
21. f
22. h
23. b
24. d
25. a
26. c
27. g

Problem-Solving

28. The four traits of fish are they all live in water, filter oxygen using gills, have fins and backbones. (Accept any three traits as being correct.)
29. Plankton is very important because phytoplankton is the base of the marine food chain. Many animals eat phytoplankton and humans eat animals that eat phytoplankton. A lot of the oxygen we breathe comes from oxygen produced by phytoplankton (estimated around two-thirds). Types of zooplankton (like copepods and krill) are some of the most abundant animals on Earth. (Accept any two facts as being correct.)
30. Algae and plants are alike because they both produce food using the process of photosynthesis. Plants and algae are different because plants have roots and most algae have holdfasts. Plants eat using a vascular system but algae absorb nutrients directly from the water. Plants live mostly on land and algae lives mostly in water. (Accept the one "alike" answer and one or more of the "different" answers as being correct.)
31. Challenges rocky shore organisms face include: the force of waves, the rise and fall of the tides, the change in water temperature, the change in air temperature, the change in the water's salinity levels, finding food, and avoiding predators. (Accept three facts as being correct.)
32. Adaptations that would help an organism survive the middle intertidal zone include an ability to catch food like filter feeding or strong claws, an ability to stay wet/moist when exposed to air such as a covering like a barnacle, an ability to avoid predators such as an exoskeleton or a type of camouflage. (Accept two or more of the facts as being correct.)