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Plants, Animals, and Others, Oh My!

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Grade Level
First Grade

Subject Area
General Science

VA SEA is a collaborative project between the Chesapeake Bay National Estuarine Research Reserve, the Virginia Institute of Marine Science's Marine Advisory Program, and Virginia Sea Grant. The VA SEA project is made possible through funding from the National Estuarine Research Reserve System Science Collaborative, which supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is funded by the National Oceanic and Atmospheric Administration and managed by the University of Michigan Water Center.

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Focus: Difference between biotic and abiotic ocean life

Grade Level: 1st Grade

Virginia Standards of Learning (all Standards of Learning can be found here):

1.1c The student with demonstrate an understanding of scientific and engineering practices by interpreting, analyzing, and evaluating data

- Use and share pictures, drawings, and/or writings of observations
- Describe patterns and relationships
- Classify and arrange objects based on a single physical characteristic or property
- Organize and represent various forms of data using tables, picture graphs, and object graphs
- Read and interpret data displayed in tables, picture graphs, and object graphs using vocabulary *more, less, fewer, greater than, less than, and equal to*

1.4c: The student will investigate and understand that plants have basic life needs and function parts that allow them to survive. Key ideas include plants can be classified based on a variety of characteristics.

1.5c: The student will investigate and understand that animals, including humans, have basic life needs and function parts that allow them to survive. Key ideas include animals can be classified based on a variety of characteristics.

Learning Objectives:

- Students will determine differences between marine plants and animals.
- Students will determine the differences between biotic and abiotic features.
- Students will create and read a pictograph.
- Students will become familiar with local marine flora and fauna.

Total Length of Time Required For the Lesson: 45 min

Vocabulary:

- **Plant:** An organism that typically makes its own food through a chemical process called photosynthesis (which uses sun and water) (adapted from dictionary.com)
- **Animal:** An organism that typically cannot make its own food (will have to eat to survive) and can move by its own choice (adapted from dictionary.com)
- **Abiotic:** Something that is non-living (adapted from dictionary.com)
- **Biotic:** Something that is or is related to living things (adapted from dictionary.com)
- **Pictograph:** A pictorial representation of data using images or symbols (adapted from cuemath.com)
- **Marine:** Related to or living in the sea (adapted from dictionary.com)

Background Information: The Chesapeake Bay is home to a variety of diverse flora and fauna that dwell under the surface of our waters. However, because of that diversity, it can be a little hard to tell different underwater dwellers apart. Oftentimes, there are animals that look like rocks, fish that look like plants, plants that look like debris, and lots of other tricky critters. Using real research that highlights what is in the Bay, this lesson plan will teach students both essential math skills and sorting and categorization skills based on characteristics.

In the Chesapeake Bay, the Virginia Institute of Marine Science has been figuring out what's under the surface for many decades. From tiny, microscopic plankton that drift at the surface, to barely moving oysters that are delicious by the dozen, we have been surveying the Chesapeake Bay using a variety of methods. It is estimated that there are over 4,000 species that either call the Bay home all year round or are visitors of the Bay (Murdy and Musick 2007, Center for Coastal Resources Management). Even through a small class project in the bays of the Eastern Shore of Virginia, I was able to see the true diversity that lives under the water. Understanding what these underwater players are will create a sense of wonder and open up students to a whole new world, right below the surface.

Materials & Supplies:

- Whiteboard (alternatively butcher paper), one sheet or board
- Dry erase markers (alternatively markers), 3-4 colors, one of each
- Pre-printed photos, 2-3 per group of students
- Clear tape to stick cards on paper or board

Classroom Set-Up:

Students can work in pairs or small groups for this activity. There should be a large board (white board/smart board) for the entire class that you can draw on and add pictures to. Alternatively, large butcher paper would work if a whiteboard isn't available.

Procedure:

Activity Set-Up: 10 minutes

1) Print out photos provided in Appendix I.
2) Each group will need 2-3 cards, so ensure that you have enough cards for the amount of students in your class.
3) For better results and reusability, laminate photos.
4) On a whiteboard or piece of butcher paper, draw the axis of a pictograph with the left side labeled "Plant", "Animal", or "Non-Living" and the title saying "Types of Marine Life".
5) On the graph, add tape to the board so that students can easily stick on their pictures when ready.
6) Add a few more pieces than you think are needed to allow for sorting errors.
7) Ensure that all pictures are shuffled so students get a variety of cards.

Introduction: 20 minutes

1) Use the PowerPoint attached or create your own PowerPoint to talk briefly about the Chesapeake Bay and to discuss how you could distinguish between a plant, animal, and non-living creature including characteristics of each.
2) Have students think of some terrestrial examples before having them name some marine examples as well.
3) If students are not familiar, also take this time to introduce the idea of a pictograph.

Activity: 15 minutes

1) Break groups up into pairs or small groups depending on the size of the classroom.
2) Give each pair or group 3-4 pictures and tell them to discuss if they think it is an animal, plant, or non-living object. Some may be tricky!

3) After about 10 minutes or when students seem to be ready, invite groups up one at a time to come up to the board where the pictograph outline is and stick it in the correct category by having them attach it to the tape set up on the board.
4) Once all are added, go through and see which ones may need to be moved and discuss why. You can use questions such as “how do we feel about these categories?” and “do we think any of them need to be changed?”
5) Then, students can discuss what the overall trends are using words such as “greater than”, “equal to”, etc. You can use questions like “which group has the most amount of things in it?” and “do any groups have an equal amount to each other?”.

Discussion and Assessment: 10 minutes

1) Once the activity has been completed, ask a few refresher questions such as “what traits do animals have?” or “what traits do plants have?” to refresh students' memory before the exit ticket assessment.

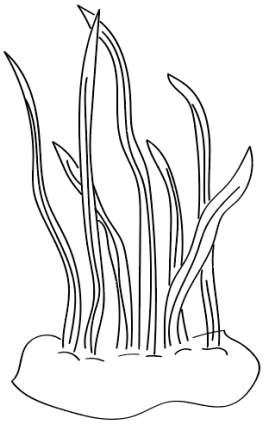
2) To assess their learning, use the exit ticket provided within this packet. This can be used as an exit ticket and will allow students to think critically but also creatively about what they have learned.

References

Fauna. Virginia Institute of Marine Science, Center for Coastal Resources Management. https://www.vims.edu/ccrm/research/ecology/fauna/index.php

Murdy, Edward O., et al. *Field Guide to Fishes of the Chesapeake Bay*. Johns Hopkins University Press, 2013.

Appendix 1: Illustrative cards



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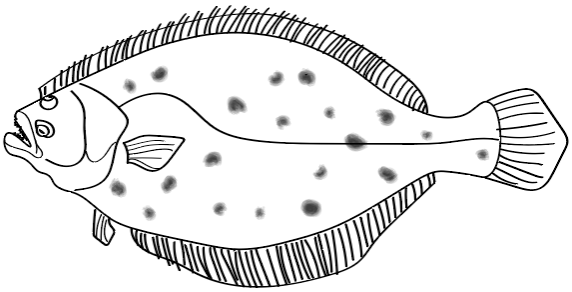

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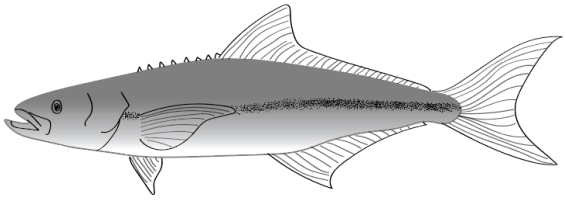

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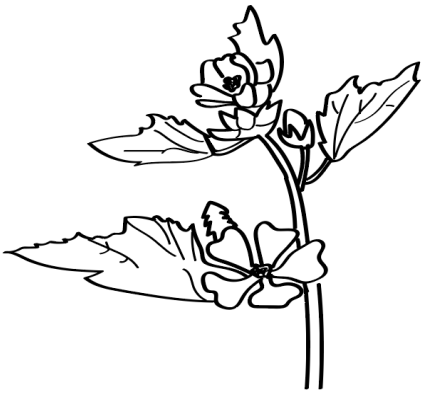

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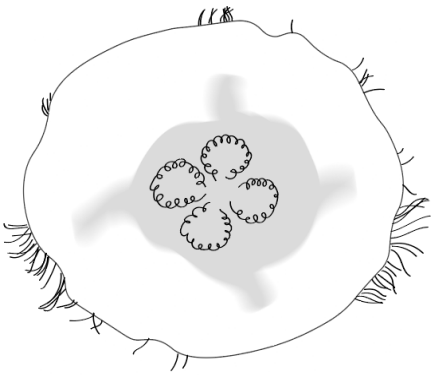

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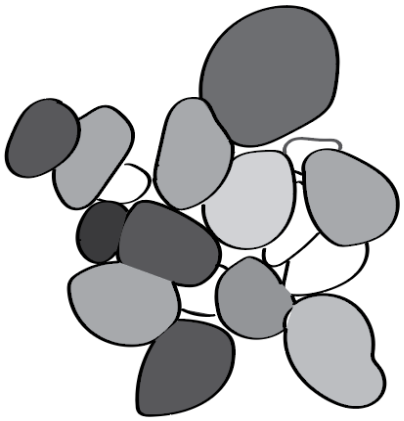

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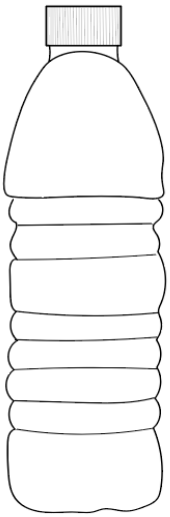

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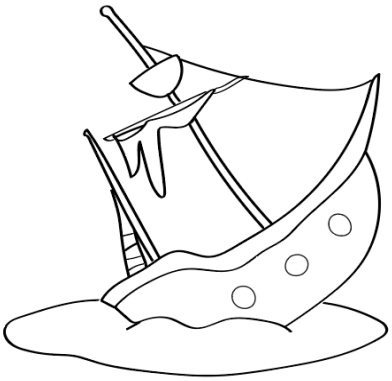

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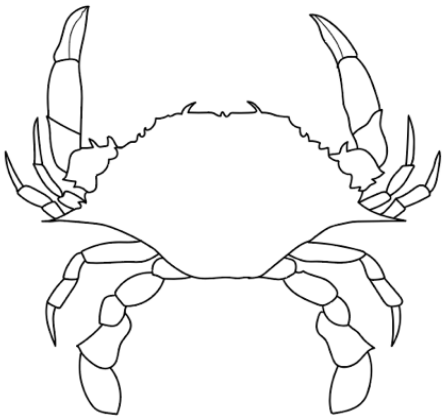

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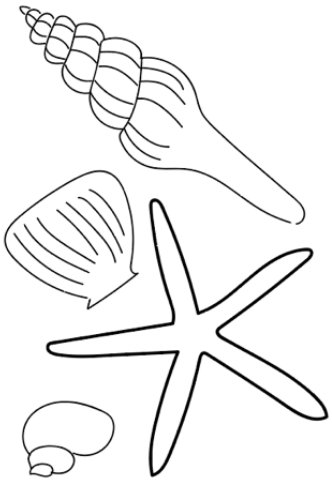
11.



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Appendix 2: Exit Ticket

Name:

Date:

Instructions:

In the space below, draw one animal, one plant, and one non-living thing of your choosing. These can be made-up using the traits we talked about, or something that already exists. Get creative!

Animal:

Plant:

Non-living:

Appendix 3: Card IDs

1) Seagrass (plant), original drawing

2) Flounder (animal), original drawing based on this source

3) Cobia (animal), original drawing based on this source

4) *Spartina alterniflora* (plant), commonly known as saltmarsh cordgrass, original drawing based on this source

5) Marsh mallow (plant), original drawing based on this source

6) Moon jelly (animal), original drawing based on this source

7) Pebbles (non-living), original drawing based on this source

8) Plastic bottle (non-living), original drawing based on this source

9) Shipwreck (non-living), original drawing based on this source

10) Blue crab (animal), original drawing based on this source

11) Sea lavender (plant), original drawing based on this source

12) Shells (non-living OR animal, original drawing based on this source