



Map Makers

2nd Grade

Students use mapmaking to develop science and social studies concepts and practice map skills while developing a sense of place and a connection to the property. Concepts of landforms, water bodies, and the prevention of erosion are woven into the guided walk at Cedar Tree Neck.



<p>Massachusetts Science and Technology/ Engineering Curriculum Framework- 2016</p>	<p>Massachusetts History and Social Science Learning Standards</p>
<p>2-ESS2-1. Investigate and compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land (dikes, windbreaks, shrubs, trees). Students can generate solutions or they can be observed/provided.</p> <p>2-ESS2-2. Map the shapes and types of landforms and bodies of water in an area. [Clarification Statement: Examples of types of landforms can include hills, valleys, river banks, and dunes. Examples of water bodies can include streams, ponds, and rivers.]</p> <p>2-ESS4-1 (MA). Observe how blowing wind and flowing water can move Earth materials from one place to another and change the shape of a landform (hills, valleys, river banks, and dunes).</p>	<p>1st gr Describe a map as a representation of a space, such as the classroom, the school, the neighborhood, town, city, state, country, or world. (G)</p> <p>1st gr Identify cardinal directions (north, east, south, west) and apply them to maps, locations in the classroom, school, playground, and community. (G)</p> <p>2nd gr Describe how maps and globes depict geographical information in different ways. (G)</p> <p>2nd gr Read globes and maps and follow narrative accounts using them. (G, H)</p>
<p>Big Ideas/Enduring Understandings</p> <ol style="list-style-type: none"> 1. Earth’s surface has different natural features called landforms. 2. Making maps helps us know more about the places we explore. 3. We can make maps of many different things: the sounds we hear, the things we see in nature, hidden objects, and more. 4. Labeling maps with a title, a legend, and directions helps others read a map. 	<p>Students will know...Concepts</p> <p>Rocks, soils, and sand are present in most areas where plants and animals live. There may also be rivers, streams, lakes, and ponds. Maps show where things are located. One can map the shapes and kinds of land and water in any area. (<i>Next Generation Science Standards-- 2-ESS2-e, 2-ESS2-a</i>)</p>
<p>Essential Questions</p> <ul style="list-style-type: none"> • How do we use maps to share our observations? • What do good maps need to have? • What types of landforms and water bodies are found on Martha’s Vineyard? 	<p>Students will be able to...Skills</p> <ul style="list-style-type: none"> • Use a magnifying glass to make close observations. • Use a compass to orient a map to North. • Create maps that model examples of landforms and water bodies found on Martha’s Vineyard.

Before You Visit

Pre-Unit Performance Task

Draw a map of your neighborhood and the special places around it (see file **Map Makers Performance Task**)

Map Adventures curriculum from United States Geological Survey

<http://egsc.usgs.gov/isb/pubs/teachers-packets/mapadventures/>

Interactive lessons introducing different viewpoints, map symbols, cardinal directions, grids, and scale. Includes printable student activities.

Reading a Map Web Rangers curriculum from National Park Service

Interactive introduction to points-of-view, topographical maps, and map reading:

<http://www.webrangers.us/activities/readingmap/>

Introduction to the **Compass Rose and Cardinal Directions** (see **Reading a Map** worksheet)

Orienting a Compass: see **Red Fred in the Shed** handout. Have students practice orienting themselves and a map to North.

Measuring Martha's Vineyard: Use this activity to practice using a map scale. Students can use a string to measure the distance around the island, and can use string or a ruler to measure distances between island towns.

Preview **Cedar Tree Neck Trail Map:** Have students preview the trail map in class and help plan the trip. Using string, have students measure the length of each trail. Mark a map with the locations in which you plan to do certain activities.

Use **Google Earth** to look at the sanctuary and make observations and predictions about the landforms and water bodies they will see on the trip.

On the Trip

Making Maps

Landform Maps: Provide students with clipboards and paper to create a map of the sanctuary. As you walk the property, stop at different landforms and water bodies (hill, valley, freshwater stream, dunes, ocean, freshwater pond). Have them use compasses to orient themselves and their papers to north, and draw the landforms and water bodies that you stop to observe. *Observe and discuss how fencing and beach grass in dunes prevents sand from blowing away. Observe and discuss patterns of curves and deposition in stream (maybe float a leaf or object) and discuss how this affects the shape of the valley.*

Sound Maps: students sit in individual spots (or small groups depending on the number of adults). To start their maps, they should draw some of the key natural features near them. As they hear different sounds, they use words or simple drawings to add them to their maps in relative location to each other.

Find a Penny: Give each student a penny or other small object. Spread students out enough that they are about 10-15 feet away from each other. Have each student hide their object and take 10 minutes to draw a brief map showing the location of their object. Bring students back together, and have them switch maps (try to give maps to students who were farthest away from each other). Discuss how adding landmarks, details, relative location of objects, and keeping sizes in scale can help a map be more readable. This activity can be done at beach or spread out along the stream.

100-inch Microhikes: Give each student a 100-inch long piece of string. They can either place it in a circle or as a "trail." Explain to students that they will need to get down to the level of an ant to see what it's really like to be as small as an ant. With magnifying glasses, they can examine small plants, insects, sand, etc. carefully. You can have them draw a map of all the tiny things in their area, labeling key parts along their "trail."

Variations:

1. Micro-Parks: Discuss with the group what makes a good park (boundaries, trails, food, shelter, water, entertainment). They can create their area within the string as a park, and make a map of their park, including all the points of interest.
2. Using slightly larger observation areas, have students make plant maps, which could include plant identification.
3. Have students use their imagination to name certain micro-features as types of landforms (ie. that tiny bump in the sand could be Rebecca's Mountain) and water bodies.

Reading Maps

Cedar Tree Neck Trail Map Once at the sanctuary, have students use compasses, look at intersections, and pace out distances to determine whether or not they think they are at correct activity sites. If you have a handheld device with Google Maps, you can also have students use this to navigate to pre-pinned sites, either by examining latitude and longitude, or by following the compass and "blue dot".

Additional Activity for standard 2-ESS2-1. *At the beach, have small groups of students build a sand and rock structure of a given height, adding in rocks, brush, moats, etc. to "guard" their structure. "Test" the strength of each group's barrier by tossing a bucket of water towards it to create a "storm". Discuss which barrier worked best to prevent water from changing the shape of their structure.*

After You Visit

Imaginary Sanctuary Maps

Students create maps of their own imaginary sanctuary. Provide a list of landforms and water bodies they should include. They should think about what a sanctuary needs to have in order to meet the needs of wildlife and people. They can also include things based on their own interests. Each map should include a compass rose, key, map symbols, and names of important sites.

Back at school, look at **Google Earth** again, and have students compare their maps to the topography seen on Google Earth.

Post Unit Performance Task

Draw a map of your neighborhood and the special places around it (see attached)

Complete **The Important Thing About Cedar Tree Neck** sheet as a group or individually and return to SMF.

Extensions:

- On the field trips, use the Explorer Kit materials to reinforce concepts of living and non-living, sensory observation, tree identification, or bird identification.

Sources and Resources:

- Sobel, David. 1998. Mapmaking With Children: Sense of Place Education for the Elementary Years, Heinemann, Portsmouth, NH.
- Map Adventures curriculum from United States Geological Survey
<http://egsc.usgs.gov/isb/pubs/teachers-packets/mapadventures/>
- Web Rangers curriculum from National Park Service
<http://www.webrangers.us/activities/readingmap/>