Lesson 2: Sailing

Getting Started

?? Big Ideas

- What methods did sailors have for survival on the seas?

📖 Facts and Definitions

- **Navigation** is to direct the course of a ship.
- A **fathom** measures depth; 1 fathom = 6 feet.
- A **knot** is used to measure how fast a boat travels.
- A **league** is three nautical miles. (A nautical mile is about 800 feet longer than a mile on land.)

🎯 Skills

- Distinguish between various types of maps and globes. (SS)
- Use cardinal and intermediate directions to locate places. (SS)
- Identify and use the compass rose. (SS)

🔍 Materials

- ✓ 1 sewing needle about 1 inch long
- ✓ parchment paper* (Activity 1 - optional)
- ✓ small cup of water
- ✓ world map
- ✓ journal
- ✓ small bar magnet
- ✓ small piece of cork

Introduction

Tell your child that today she is going to learn more about sailing and navigation. Ask your child if she has ever been on a boat and if she remembers how the boat was steered. Discuss the fact that the sailors had to understand sailing and directions in order to survive their journeys across the ocean.

Activities

Activity 1: A Navigational Guide

Tell your child that early sailors had a variety of methods for **navigation** (directing the course of a ship). Read through the following list with your child. Many of these strategies were used as early as 4th century BC.

1. Keep in sight of land and follow the coast.
2. Steer by the Sun and the stars. At any one point in the year, the Sun and stars are found above the horizon at fixed heights.
3. Keep an eye on the currents. These can easily throw sailors off course.
4. Use the winds. They can help you along in the right direction.
5. Use a compass. The navigational compass was invented in Europe around 1300.

Ask your child to make a small navigational guide that describes each navigational method and how it can help a sailor navigate a ship. The guide can include an illustration and a description of each method listed. To make the guide more authentic, use a piece of parchment type paper and roll it like a scroll so that a sailor could unroll it to remind him of the navigational tips.
Activity 2: Cardinal Directions

Discuss the fact that sailors had to be good at their cardinal directions. Review the cardinal directions (N, S, E, W, NE, SW, SE, and NW). To practice, you can put N, E, S, W signs on the four walls of a room. Then you can ask your child to move in certain directions. For fun and practice, put an object in one part of the room (without her looking) and direct her to it by having her follow cardinal directions. For example, put a stuffed animal in a corner of the room and have her start at the opposite end. Tell her to take two steps NE, four steps N, and three steps NW.

Then choose an option for your child to complete.

Option 1

Give your child the map, "Cardinal Directions" (Option 1), and ask her to locate things on the map using cardinal directions. She can label the cardinal directions on the compass rose.

Option 2

For this option, your child will create her own map following the directions at the bottom of the page.

Activity 3: Units of Measurement

Sailors have unique measurements for the ocean. Tell your child to record the following units of measurement in her journal. Then she will decide which measurement should be used in each situation on the activity sheet, "Units of Measurement."

- **League** — 3 nautical miles
- **Fathom** — 6 feet deep
- **Knot** — a unit of speed (1 nautical mile per hour)

Activity 4: Making a Compass

For this activity, your child will make her own compass to find magnetic north or south.

*Scientific Explanation:* The Earth produces a magnetic field that can align magnetic compounds like the needle. By floating the needle on the cork, you let it rotate freely so it can orient itself within the Earth's magnetic field to point toward the north or south poles of the planet.

Activity 5: Latitude and Longitude

Discuss lines of latitude and longitude. Locate lines of latitude and longitude on a world map or globe. Discuss the fact that, for many years, sailors have used these imaginary lines as guides to help them find the geographical location of ships and landforms in the water.

Ask your child to locate the lines of latitude and longitude for different islands in different places in the world, such as Hawaii, Tahiti, Grand Cayman, and Madagascar. Then name a location using lines of latitude and longitude and ask her to tell you what landform or body of water can be found at that location.

Activity 6: Parts of a Spanish Ship

Let your child label the parts of a Spanish sailing ship on this simple diagram, "Parts of a Ship." The words are listed at the top of the page. You may need to help her with some research to find the location of the ship's parts.
Ask your child what she learned about sailing today. Ask her if she thinks she would enjoy being a sailor.

**Life Application**

Let your child go sailing on a boat. Let her use the compass to find cardinal directions and give her an opportunity to steer the boat, if possible.
Directions: Label the compass rose. Answer the questions about the map.

1. What is northwest of Pina Vida?
2. Would you travel northwest or southeast to get from Comel to Gaston Bay?
3. What is south of Janica?
4. Which direction would you sail to go from Janica to Comel?
5. What is south of Tindra Volcano?
6. Is Molo Bay on the southeast or southwest side of Janica?
Early Explorers -> 2: Sailing Activity 2 - Option 2

Cardinal Directions: Follow the directions below to create your own island map.

1. Draw an island called Pina Vida in the center of the map.
2. Draw a smaller island called Pina Vida in the north of Pina Vida.
3. Draw and name another island northwest of Comal Island.
4. Draw a volcano southeast of Pina Vida.
5. Label Comal Bay at the southwest side of Pina Vida.
6. Draw the island of Jancia south of Pina Vida.
7. Draw a palm tree at the north end of Pina Vida.

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Units of Measurement

Directions: Decide which measurement should be used in each situation.

1 league = 3 nautical miles
1 fathom = 6 feet deep
1 knot = 1 nautical mile per hour in speed

If we increased our speed to 12 _______ we will get there by sunset.

We dropped the anchor at 4 ____________

The captain said it was only 16 ____________ before we would dock.

The coral was only 2 _______ beneath the ship.

We traveled at 10 ____________ during the night.
Making a Compass

Materials:
1 sewing needle about 1 inch long
A small bar magnet (refrigerator magnets may work)
A small piece of cork
A small cup of water

Directions:
1. Magnetize your needle by running the magnet over it a few times in the same direction.

2. Cut a small circle from the cork and push the needle through it from one end to the other, not through the center.

3. Float the cork and needle in the cup of water so the needle floats nearly parallel to the water’s surface.

4. Place your compass on a still surface and watch it to see what happens. The needle should point to the nearest magnetic pole, either north or south.

5. Try placing a magnet near your compass and watch what happens.
Parts of a Ship

Directions: Use the word box provided to label each part of this Spanish sailing ship.

- mast
- stern
- hull
- bow
- sail