

## **Topic: Deciphering a Chart and Topographic Map**

**Primary Goal:** Introduce students to how to read, decode, and decipher a nautical chart and topographic map.

### **Lesson Objectives:**

- Ability to read and identify key features of nautical charts and topographic maps
- Identify the similarities and differences between charts and maps
- Describe different situations in which you could utilize a chart or map

### **Lesson Outline:**

- I. Key features of a Nautical Chart
  - a. Water depths
  - b. Different types of sea bottom (rock, sand, mud, wrecks, reef)
  - c. Buoys and daymarkers
  - d. Aids to navigation
    - i. Provides information to safely navigate a vessel to reach your desired location
- II. Who provides this information?
  - a. NOAA (National Oceanic and Atmospheric Administration)
  - b. NOS (National Ocean Service)
- III. What do all the letters and numbers on a chart mean?
  - a. Since charts include a great deal of information, we use a great deal of symbols and abbreviations
  - b. *Discuss some abbreviations from "Chart No. 1" publication*
- IV. Latitude & Longitude
  - a. System of geographic coordinates used to describe a specific location on the earth's surface
    - i. Measured in degrees, minutes, seconds
  - b. Meridians of Longitude – lines that specify the east-west position of a point on the Earth's surface
    - i. Passes through north and south poles
  - c. Parallels of Latitude – lines that specify the north-south position of a point on the Earth's surface
    - i. Measured by how many degrees a point is north or south from the equator
- V. Chart Projection System
  - a. Since the world is not flat (but your paper charts are) mapmakers project the earth's curved surface in two dimensions
  - b. Mercator Projection – most popular projection used for nautical charts
    - i. Flattens out the earth so that lines of latitude and longitude form a rectangular grid that you can measure

- c. *Use example of peeling an orange and attempting to lay flat*
- VI. How can we use Latitude and Longitude on a chart?
  - a. To share or record your own location
  - b. To determine the exact location of a place you would like to go
  - c. To measure distance (only using latitude)
  - d. *Have students get in groups and do “Shipwreck Exercise”*

**Supplemental Resources:**

NOAA Video: [http://celebrating200years.noaa.gov/surveyors/noaa\\_surveyors.mov](http://celebrating200years.noaa.gov/surveyors/noaa_surveyors.mov)

Chart No. 1: <http://www.nauticalcharts.noaa.gov/mcd/chart1/ChartNo1.pdf>

**Exercises/Activities:**

As you identify the different features on a chart, have students identify examples on the charts provided to them.

Provide charts and have students break up into groups. Explain that you have just come across information that there is a sunken treasure ship somewhere on the chart and provide students with a Latitude and Longitude. They must identify the location of the shipwreck on the chart.