

Chart Interpretation

INTRODUCTION

The Chart Interpretation lesson will introduce and familiarize the student in the use of a nautical chart and how to obtain information from the chart.

OBJECTIVES

By the end of this program, the student will be able to do the following:

- Describe and differentiate the basic topographic characteristics of a chart to include but not limited to the following:
 - Land vs. water
 - Rivers
 - Bays
 - Ocean
- Demonstrate the use of nautical tools used to plot fixed points on a navigational chart.
- Define longitude and latitude and demonstrate their use on a nautical chart.
- Calculate distances using latitude scales.
- Describe and demonstrate the use of a compass rose.
- Interpret water depth and differentiate between fathoms and feet.
- Describe and interpret sea floor composition symbology.
- Identify and describe navigational hazards and aids to navigation symbology to include, but not limited to, the following:
 - Wrecks
 - Shoal water
 - Channels
 - Buoys
 - Lights

Chart Interpretation

1. Basic Chart Reading

- a. Explain that Chart One identifies all symbols on a chart.
- b. Point out the characteristics of a chart:
 - 1) land vs. water
 - 2) ocean
 - 3) bay
 - 4) rivers

2. Longitude and Latitude

- a. Show latitude scales on either sides of the chart.
 - 1) Explain that latitude is a measurement of distance in degrees, north or south of the equator.
 - 2) There are 90 degrees of latitude from the equator to the north pole and 90 degrees of latitude from the equator to the south pole. Above the equator is north, below south.
 - 3) Latitude lines are parallel and the same distance apart.
- b. Show longitude scales on the top and bottom of the chart.
 - 1) Explain that longitude lines are a measurement of distance, in degrees, east or west from the prime meridian.
 - 2) The prime meridian is the meridian of 0 degrees longitude, which runs through Greenwich, England, and from which other longitudes are reckoned. The prime meridian divides the earth in half, vertically at Greenwich, England.
 - 3) Explain that the lines pass through both the north and south pole, but the lines are not parallel. This makes the earth look like a peeled orange.
- c. Pass out basic latitude/longitude worksheet.

3. Compass/divider exercise

- a. Show how to use a compass/divider to plot latitude and longitude
 1. Show and explain degrees and minutes.
 2. Explain that one-minute equals one nautical mile. There are 180 degrees on either side of the prime meridian. Longitude lines to the left of the prime meridian are west (W) lines and to the right are east (E) lines.

4. Compass Rose/Bearings

- a. Show where the compass rose is located on the charts.
- b. Show that the compass goes from 000 – 359 degrees. Relate it to a circle of 360 degrees and emphasize that 360=000.
- c. Explain bearings (direction from one point to another point).
- d. The compass rose shows us:
 1. true bearings- they are relative to true north and are read from the compass rose on the chart (outer ring)
 2. magnetic north- based on the earth's magnetic field, which is always changing (inner ring)
 3. local variation- tells the difference between magnetic and true north on that particular chart (located in the center of the compass rose).
 - i. Using parallels, show how to get a bearing from one point to another.

5. Water Depth.

- a. Discuss that a fathom is a unit of vertical measurement in the water.
- b. One fathom equals six feet.
- c. Show examples of water depth and convert to fathoms or feet.

6. Sea Floor Composition.

- a. Discuss that the bottom of the ocean is made up of different types of substances: sand, mud, clay, rocks, shells

- b. Discuss the different symbols and letters that show what the bottom consists of.
- c. Explain that Chart One identifies all of the different symbols and letters on a chart.

7. Navigation Hazards/Aids to Navigation Symbology.

- e. Discuss different symbols that are found on the chart such as; wrecks, shoal water, hazards to navigation, buoys

8. Plot last known position of the USS Alligator.

9. Pass out chart navigation worksheet.

EQUIPMENT:

NOAA nautical charts

compasses/dividers

parallels

NOAA chart #1 or symbology key

sharp pencils

Chart Work Sheet

1. Plot 36 57 N, 075 45 W. At that point, what is the depth of the water in feet/fathoms _____? What does the sea floor consist of _____?
2. Plot 37 05.7 N, 075 41.5 W. At this point, what is the depth of the water in feet/fathoms _____? What does the sea floor consist of _____?
3. Plot 37 10.2 N, 075 49.2 W. At this point, what is the hazard to navigation? _____
4. Plot 37 01.3 N, 076 09 W. At this point, what is the aid to navigation?

5. Plot point A at 37 N, 076 W, then plot point B at 37 03 N, 075 57.2 W
What is the bearing and distance from point A to point B? _____
6. Plot point A at 37 10 N, 076 40 W then plot point B at 37 06 N, 075 35 W.
What is the bearing and distance from point B to point A? _____

Locate the latitude and longitude from the center of each picture.
Write your answer on the latitude and longitude worksheet.

25° N

20° N

15° N

10° N

5° N

0° N

5° S

10° S

15° S

20° S

25° S

10° W

5° W

0°

5° E

10° E

15° E

20° E



Latitude and Longitude Worksheet

OBJECT	LATITUDE	LONGITUDE
Hurricane	_____	_____
Fish	_____	_____
Dolphins	_____	_____
Lighthouse	_____	_____
World	_____	_____
Lizard w/coffee	_____	_____
Compass Rose	_____	_____