

# 20,000 Fathoms Under the Sea!



**Objectives:**

- Students will draw a topographic map using points of measured elevation.
- Students will plot data on graphs.
- Students will make a model of the ocean floor.

**Materials:**

Sounding rod, ocean profile box, compass, transparency film, water soluble markers

**Procedures:**

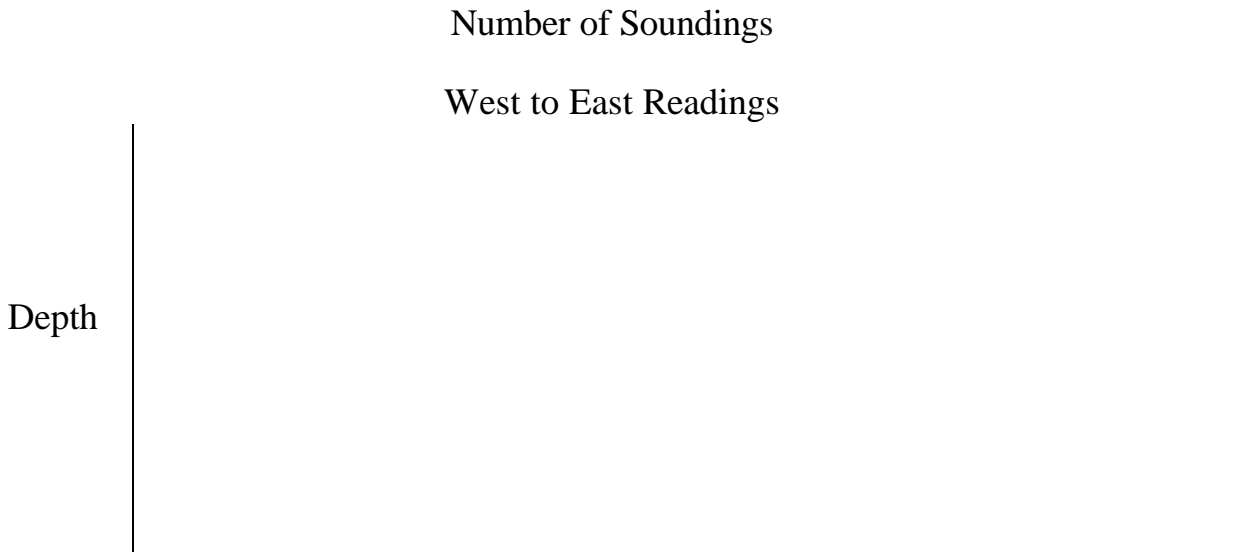
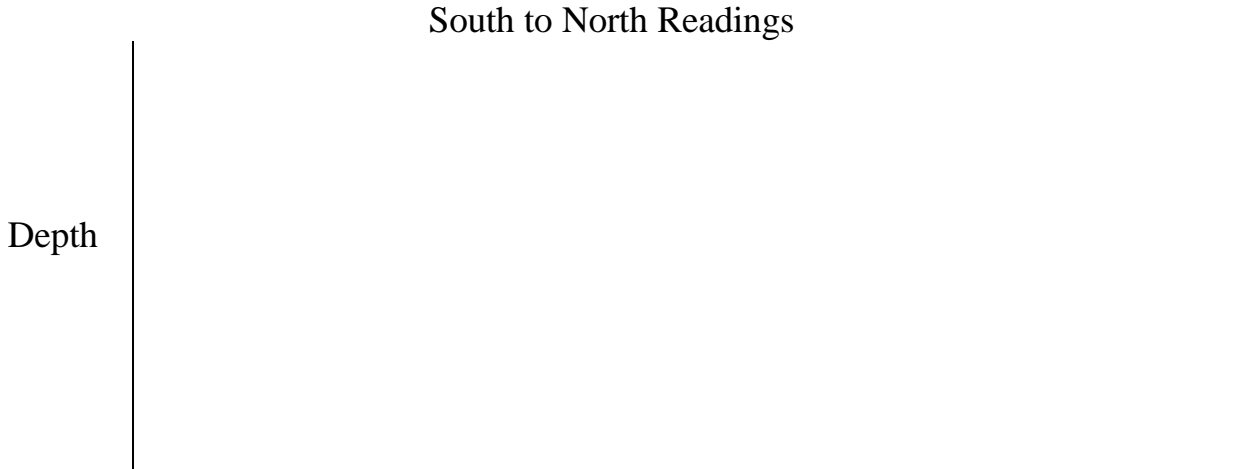
1. Insert the sounding rod through one of the holes in the top of the ocean profile box. **Do not force the rod into the ocean bottom.**
2. How many marks deep was it? \_\_\_\_\_ If every mark equals one fathom, what was the depth? \_\_\_\_\_
3. Take two more readings. Reading 1 \_\_\_\_\_ Reading 2 \_\_\_\_\_
4. If instead of these random readings, you took several measurements in certain directions, you would be able to draw an ocean floor profile. Using the compass, orient your box with the North end pointing to magnetic north.
5. Start at point A (southwest corner) and take a reading at each hole as you travel north. Record your data on Table I in the South to North column.
6. Return to point A and take readings moving east. Record these on Table I in the West to East column.
7. Return to point A. Take readings from southwest to northeast. Record these on Table II.

**Results:**

Table I: North and East Soundings

Sounding	South to North Readings	West to East Readings


Plot these readings on the following graphs.

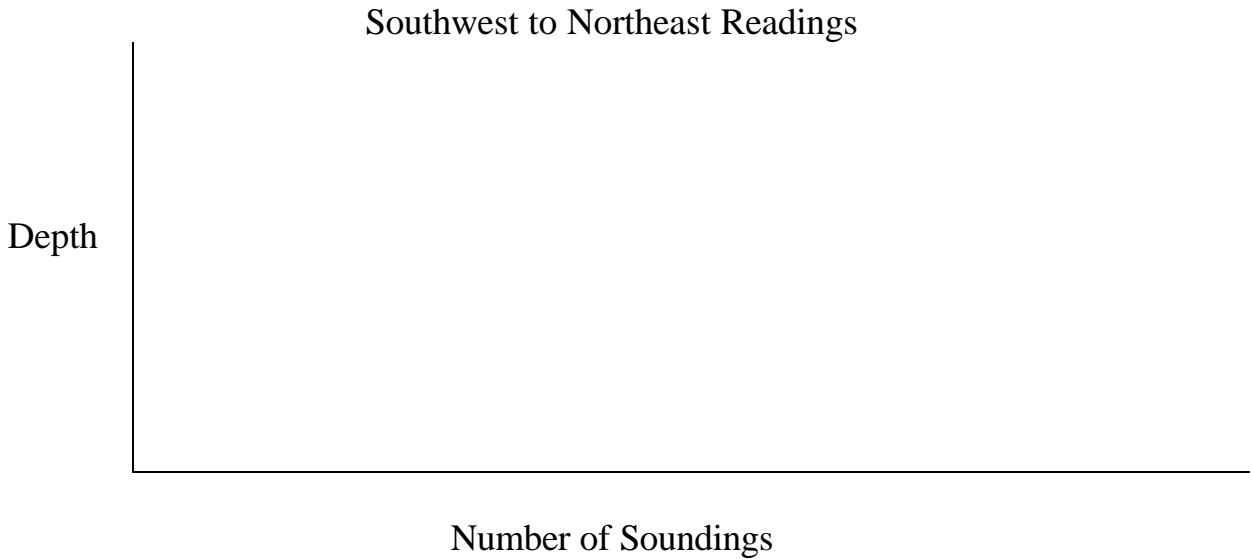


Number of Soundings

Table II: Southwest to Northeast Soundings

Sounding	Southwest to Northeast Readings


Plot these readings on the following graphs.

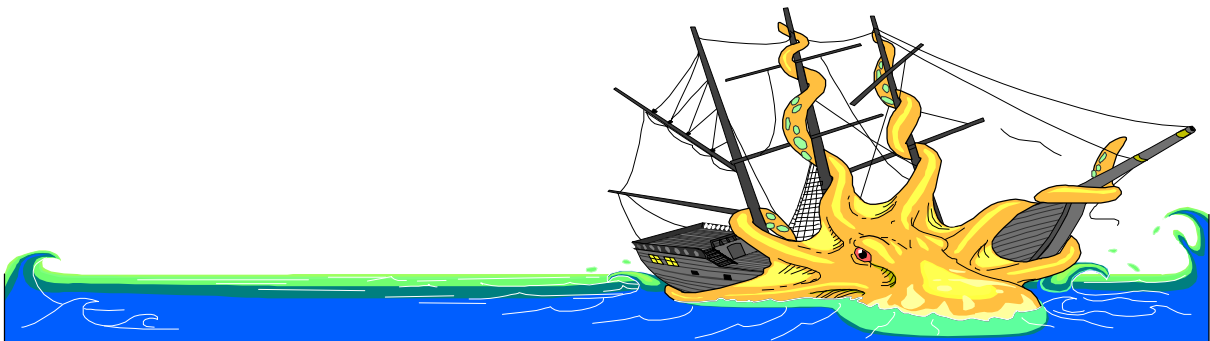


1. Describe the profile of the ocean floor as you moved from south to north.
2. Describe the profile as you moved from west to east.
3. Describe the profile as you moved from southwest to northeast.



4. Do any of these profiles give you a complete picture of the ocean floor? Why or why not?

5. What would you have to do to prepare a topographic map of the area from which you recorded data?
  
6. Challenge: Place a piece of transparency film over the holes in your ocean profile box. Mark each hole from which you took a sounding. Using your depth readings, draw a topographic map.



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## Teacher's Instructions



### Objectives:

- Students will draw a topographic map using points of measured elevation.
- Students will plot data on graphs.

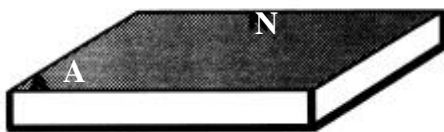
### Materials:

Shoebboxes, coat hangers, glue, wire cutters, permanent markers, cardboard, band saw (optional), Exacto® knife, metric ruler.

### Procedure:

1. Cut the hooks off the coat hangers. Each hanger will make 3 or 4 sounding rods, depending on the depth of your shoe boxes. Cut the hanger into relatively equal lengths.
2. Mark off the rods in equal increments using the permanent markers and the metric ruler.
3. Mark off the tops of the shoe boxes in 3 cm squares. Using the Exacto® knife, drill small holes at the corners of these squares (only where four squares meet). The holes should be large enough for the sounding rod, but not so large that they may be seen through.
4. Mark "N" in the center of one side of the top. Mark "A" in the lower left edge of the top. See illustration A.
5. The ocean floor profile may be created using pre-formed cardboard boxes, free form shapes you design from bending the cardboard, or other materials which can be permanently affixed to the bottom and sides of the boxes. Be sure the shapes are sturdy and that they will not shake loose from the bottom of the box.
6. Optional: Using a band saw, cut the cardboard into concentric shapes which may be stacked on top of one another. You will build a three dimensional topographic map. See illustration B.

**ILLUSTRATION A**



**ILLUSTRATION B**

