

# Measure for Measure

## Background

The *JOIDES Resolution* is one of many kinds of ships used to study the ocean. It is designed so that scientists can sail nearly anywhere in the world to drill for samples of rocks and sediment below the seafloor to discover clues about Earth's history and structure, life in the deep biosphere, past climate change, earthquakes and natural resources.

The *JOIDES Resolution* is a very large ship! It is 143 meters long and 21 meters wide. Unlike most vessels, it has a flat bottom, with 7-meter hole in the middle and a derrick towering 62 meters above the waterline! Its drill string (the pipes that are strung from the derrick to the seafloor and below) can collect samples as shallow as 38 meters and as deep as 8,382 meters below the ocean surface. The samples can then be studied in the many laboratories on board.

**Objectives:** To compare the size of the *JOIDES Resolution* to your classroom and to use ratios and fractions to draw a scale model of the ship.

**National Science Education Standard D:** Earth and Space

**Math Standards:** Measurement

## Materials

1. Measuring Tape
2. Butcher paper

Free Deep Earth Academy  
measuring tapes available! Email:  
[deepearthacademy@oceanleadership.org](mailto:deepearthacademy@oceanleadership.org)

## Methods

Use the Background information and the tape measure to complete the following:

See just how big the ship is:

1. Use a measuring tape to help you calculate the ratio of ship length to classroom length. How many of your classrooms would fit in the length of the ship?
2. Use a measuring tape to determine how much taller the ship is than your classroom?

Draw a scale model of the ship the length of a piece of butcher paper.

1. Determine the scale by finding the ratio of the "life size" *JOIDES Resolution* to the butcher paper – 143m: butcher paper length (round to the nearest cm). Write the ratio as a fraction, then divide to get the scale.
2. Use the scale to determine the following dimensions for your drawing:
  - a. Ship's height
  - b. Drill hole
  - c. Derrick (remember, the height given above is from the waterline)
  - d. Greatest drill hole depth
  - e. Shallowest drill hole depth
3. Draw the *JOIDES Resolution*. You may need more than one piece of butcher paper!

## Extensions

1. To learn more about the ship, visit [www.joidesresolution.org](http://www.joidesresolution.org).
2. Create a scale model of the *JOIDES Resolution* with the drill string extended.