Name: _ Date:

Student Exploration: Ocean Mapping

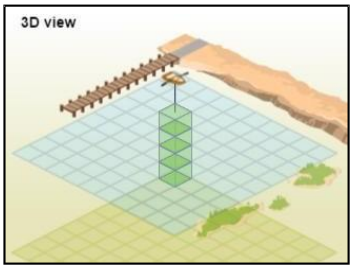
Vocabulary: coordinates, latitude, longitude, sonar

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)
You are exploring a cave. As you enter a room, your light suddenly goes out—dead batteries! While waiting for your companions to catch up, you try to estimate the size of the room by clapping your hands.

1. You clap your hands, and instantly you hear an echo of the clap. What does this tell you about the size of the room? __The room is could be either small or big but the room is full._____

2. Suppose when you clap your hands you hear the echo a few seconds later. What can you say about the size of this room? __The room is large and empty._____

Gizmo Warm-up
To measure the depth of the ocean floor, scientists use a technology called **sonar**. A pulse of sound waves is emitted by a transmitter. The waves bounce off the ocean floor and return to the instrument. The time it takes the signal to return to the device is recorded and analyzed to determine the depth of the ocean at that point. The *Ocean Mapping* Gizmo™ allows you to create and interpret maps made by this method.



1. On the 3D POINT pane, the blue grid represents the ocean surface. The tan grid represents a depth of 6 meters (19.7 feet). Each cube has a height of 1 meter. To find the depth of the ocean, subtract the number of cubes from 6 meters.

   A. How many cubes are stacked below the boat?____5_____

B. How deep is the ocean at this point? _1_____

2. Select the TABLE tab to check your answer. Were you correct? __yes_____

3. Select the 2D MAP tab. What color represents this depth? __light blue_____