



# Trench Dive

**STEM Sims**

## Lesson 5: Trench Measurement

Unfortunately, at certain depths it becomes difficult for gauges to give accurate information. Therefore, as scientists, we have to make predictions based on patterns and trends that we notice. Can you solve the problem of the broken depth gauge and determine the depth of the ocean trench?

### Doing the Science

1. Start the Trench Dive Simulation by clicking on the “Sim” tab.
2. Click the blue “All” button to sample all variables at the surface. Record your data in Table 1.
3. Using the green dive button on the left side of the screen, dive your submersible to 1,000 m.
4. Repeat Step 2.
5. Dive your submersible to 2,000 m and repeat Step 2.
6. Dive your submersible to 2,980 m and repeat Step 2. Please note that at a depth of 3,000 your depth gauge will break.
7. Continue diving your sub, collecting samples about every 500 meters, and recording data even when the sub disappears. When your data stops changing from one measurement to the next, your sub has reached the bottom of the trench. Make sure to record your data in Table 1.

**Table 1.**

Depth (m)	0	1,000	2,000	2,980	---	---	---	---	---
Water Density (g/cm <sup>3</sup> )									
Temperature (°C)									
Pressure (N/cm <sup>2</sup> )									
Salinity (psu)									

### Do You Understand?

1. In the simulation, click on the blue “Graph” button. Next, click through of the four variable buttons (Water Density, Temperature, Pressure, and Salinity) and review each graph. Which variable’s graph is a straight line?
2. With the variable you identified in question 1, what is the relationship between that variable and depth?
3. Calculate the depth of the bottom of the trench based on your pattern and enter it below.

Trench depth = \_\_\_\_\_ meters

Return to the simulation screen by clicking the yellow “Data” button. Click on the “Trench Depth” button and enter your estimate. Were you correct?