

Details



Completion Time: Less than 1 period

Permission: Download, Share, and Remix

Down to the Deep Virtual Lab

Overview

Students are asked to predict what will happen to styro-foam objects lowered down to the bottom of the Bering Sea. Students make the appropriate calculations related to the actual experiment which took place on Maggie Prevenas' PolarTREC expedition.

Objectives

Students will make hypotheses and calculations regarding deep sea experiments that took place in the Bering Sea on a PolarTREC expedition: <http://www.polar-trec.com/bering-ecosystem-study>

Lesson Preparation

Set up Internet access for students to read journal entries at www.polar-trec.com

Procedure

Guide students through the attached activity sheet.

Extension

N/A

Resources

Maggie Prevenas' Journal entries:

May 2 - Deep Sea Experiment Part' 1 (<http://www.polar-trec.com/node/842>)

May 3 - The Cups are Back' (<http://www.polar-trec.com/node/847>)

Assessment

N/A

Credits

Maggie Prevenas, prevenas@hawaiiintel.net

Materials

- Internet access
- Calculator



National Science Education Standards (NSES)

Content Standards, Grades 5-8

Content Standard A: Science As Inquiry

- a. Abilities necessary to do scientific inquiry
- b. Understandings about scientific inquiry

Content Standard B: Physical Science

- a. Properties and changes of properties in matter

Other Standards

Hawaii Science Standard 1: The Scientific Process: SCIENTIFIC INVESTIGATION: Discover, invent, and investigate using the skills necessary to engage in the scientific process.

Name _____

One Ocean One Earth
Down to the Deep Virtual Lab

Hawaii Science Standard 1 - I can do science like scientists do.

1. Read the journal entry 'May 2-Deep Sea Experiment Part' 1 (<http://www.polarrec.com/node/842>)
What do you think? Write a hypothesis! It needs to be written as an 'If...then...because' statement.



2. Just how far is 3000 meters? Let's change meters into something you know more about, soccer fields! The international length of a soccer field is 110 meters. How many soccer fields will the cups descend?

$$3000 \text{ meters} \times \frac{1 \text{ soccer field}}{110 \text{ meters}} =$$



3. In the US, we use yards instead of meters. A meter is 1.0936 yards. Take it one more step and change it to feet. 3 feet = 1 yard

$$3000 \text{ meters} \times \frac{1.0936 \text{ yards}}{1 \text{ meter}} \times \frac{3 \text{ feet}}{1 \text{ yard}} =$$

4. You are doing GREAT! Let's figure out how many MILES the cups went down! There are 5,280 feet in 1 mile. Take your answer from the problem above, and use it to figure out the number of MILES the cups went down.



5. At 60 meters per minute (rate), why not calculate how many minutes (time) it will take for the cups to get down to 3000 meters (distance)? Rate x Time = Distance

6. The foam cups were three inches tall.
 Draw a cup that is 3 inches tall over here →
 Decorate it if you want!



7. Now draw what you think the cup is going to look like right over here. Measure the height of your guess →




8. Read the journal entry 'May 3-The Cups are Back' (<http://www.polartrec.com/node/847>)

The cups went down 3448 meters! How many soccer fields was THAT?

$$3448 \text{ meters} \times \frac{1 \text{ soccer field}}{110 \text{ meters}} =$$



9. There were 5,100 pounds per square inch working on those foam objects! If the foam objects were six square inches, how much pressure was on each of them?



$$6 \text{ square inches} \times \frac{5,100 \text{ pounds}}{1 \text{ square inch}} =$$

10. Look at the picture of the shrunken foam cup. When it was measured, the cup was 1.5 inches tall. Compare what you drew, with the shrunken cup. Do you have evidence that your hypothesis supported?

(circle) yes no What is the evidence?

Write a conclusion about the results of this experiment.

Use the information that you learned from this experiment to write a NEW hypothesis that might be tested. Remember to write it as an 'If...then...because' statement.