

## Only You Can Help Save Sam!



Sam has been spending his summer boating on the great lakes. However, he's not too bright (after all, the brains of worms are pretty small). He's never learned how to swim, and he never wears his life preserver. The worst has happened! His boat has capsized and he's stuck! Fortunately, his life preserver is in the boat, but unfortunately he does not know how to reach it without falling off and drowning.

### *Use the Scientific Method to:*

#### **Problem:**

How can you and your partner save Sam using only 4 paper clips. You may not touch Sam, the boat, or the life preserver directly with your hands.

#### **Materials:**

- Gummy Worm
- Gummy "Life Saver" preserver
- 1 Plastic or Paper Cup
- 4 Paper Clips

#### **Procedures:**

1. Work with your partner and "Save Sam".
2. Follow the rules.
  - Sam, the boat, the life preserver can be touched only with the paper clips. NO HANDS.
3. Develop a data section that includes
  - Diagrams of how you saved Sam
  - A detailed protocol describing the diagrams.
4. Homework:
  - Analyze and conclude the experiment.
    - This means that you must discuss (tell me what you think) about the difficulty of the task, what other strategies you and your partner worked on before you succeeded, and what you think the critical steps were for solving this problem.
  - Although this is working backwards, and not how scientists normally work, please develop a hypothesis for this lab. (Remember that a hypothesis is an 'if-then' statement: if I do this, then this will happen)

#### 1. **Teacher Notes:**

Sam sits on the inverted cup. The cup sits half-covering the life preserver on the tabletop. No real water is involved.

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

## Save Sam Lab

**Experimental Question:** What are you trying to figure out?

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**Discussion Ideas (Research):** Have each person in your group present at least one idea for how you will save Sam.

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_

**Hypothesis: (If . . . Then . . .)** How does your group plan to save Sam?

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**Materials:** Gummy Worm, Gummy "Life Saver" preserver, 1 Plastic or Paper Cup, 4 Paper Clips

**Procedure:** Record detailed instructions for saving Sam below. In order to save Sam you must both get the life preserver from under the boat AND get the life preserver onto Sam without using your hands! You do not have to use 6 steps. If you have more than 6 steps just add the additional steps on the last page of your lab.

	Written Instructions
Step 1:	
Step 2:	
Step 3:	

Step 4:	
Step 5:	
Step 6:	

**Now! Using the procedure that you and your partner wrote, save Sam!**

**Observations:** Explain what happened when you attempted to save Sam using the procedures above.

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**Analysis:**

Explain 2 problems you encountered in saving Sam.

1. \_\_\_\_\_
2. \_\_\_\_\_

Explain 2 ideas or techniques that you think worked well in your quest to save Sam.

1. \_\_\_\_\_
2. \_\_\_\_\_

**Conclusion:**

Describe the effectiveness of your procedure for saving Sam.

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If you could save Sam again, how would you change your procedure? What steps would you change and why?

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