

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Hour: \_\_\_\_\_

### Making Waves Lab

**Problem:** How do water waves interact with each other and with solid objects in their paths?

**Materials:** water, dropper, ruler, paper towels, clay, cork, tray

**Procedure:**

1. Fill the pan or tray with water to a depth of 1 - 1.5 cm. Let the water come to rest.
2. Fill a dropper with water. Then release a drop of water from a height of about 10 cm above the center of the pan. Observe the reflection of the waves that form and record your observations:  
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3. Make a prediction in your data table about how the paper towel might affect the reflection of the waves. Now place a paper towel across one end of the pan so it hangs in the water. Release a drop of water from about 10 cm above the center of the tank and record your observations.
4. Remove the paper towel and place a stick of clay in the water near the center of the pan. Don't forget to make a prediction about what the waves will do.
5. From a height of about 10 cm, release a drop of water into the ripple tank halfway between the clay and one of the short walls. Record your observations.
6. Place the clay in a different position so that the waves strike it at an angle. Repeat the previous step by dropping a drop of water from about 10 cm high. What do the waves do? How are they different than when they strike the barrier head on?  
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7. Place two sticks of clay end-to-end across the width of the tank. Adjust the clay so that there is a gap of about 2 cm between the ends of the two pieces. Predict what will happen and record it in your data table. Drop a drop of water from a 10 cm height and record your observations.
8. Now make a barrier with three, 2 cm gaps, predict what you think you will see, test it and record your observations.
9. Finally, repeat steps 2-8 with a cork floating in the pan. Observe and record what happens to the cork in each step on your data table.
10. When all trials are complete, clean up and dry your work area.

**Data:**

Type of Barrier	Wave Prediction	Observations of Waves	Observations of Waves With Cork
Paper towel at end of pan			
Stick of modeling clay in the center of the tank			
2 sticks of clay with gap between the middle of them			
Clay barrier with 3, 2-cm gaps			

**Questions:**

1. How are the waves affected by the paper towel hanging in the water?
2. What happens when the waves strike a barrier head on? What about when they strike it at an angle? What did you notice about the reflection?
3. What happens when the waves strike a barrier with a gap in it? With three gaps in it? What is this type of wave interaction known as?

4. What did the paper towel represent? What did the cork represent?
  
5. How does the behavior of waves in your model compare to the behavior of waves in a harbor?
  
6. In what ways does your model represent a real situation? What are some limitations of your wave tank model?
  
7. In your wave tank, when a single drop of water is dropped into the pan of water, ripples occur. Does the water move across the pan? Explain.