

# Lab: Antacid Olympics



Name:

Block:

Partner's Name:

## BACKGROUND

An antacid tablet contains citric acid and sodium bicarbonate (baking soda). When you drop the tablet in liquid, the acid and the baking soda react – this produces the fizz.

## QUESTION

How quickly can you dissolve an antacid tablet?

## HYPOTHESIS

If \_\_\_\_\_  
then \_\_\_\_\_

Independent Variable:

Controlled Variables:

Dependent Variable:

## EXPERIMENT

### CONTROL GROUP

Materials	Procedure	Observations		
		Trial 1	Trial 2	
<ul style="list-style-type: none"> <li>• 2 x beaker</li> <li>• 2 x 50 mL tap water (____°C)</li> <li>• 2 x antacid tablet</li> <li>• Stopwatch</li> </ul>	<ol style="list-style-type: none"> <li>1. Put on safety goggles</li> <li>2. Use a graduated cylinder to measure 50.0 mL of tap water into each beaker</li> <li>3. Measure and record the temperature of the water</li> <li>4. At the same time:                             <ol style="list-style-type: none"> <li>a. Drop an antacid tablet into each beaker and</li> <li>b. Start the timer</li> </ol> </li> <li>5. Record qualitative observations and the time until the tablet is completely dissolved</li> </ol>	Qualitative		
		Quantitative	Reaction time: _____	Reaction time: _____

**MATERIALS** (check or circle all materials you will use; include how many if more than 1)

Provided	Available			
<ul style="list-style-type: none"> <li>✓ Safety goggles</li> <li>✓ 2 x Beaker</li> <li>✓ 2 x Antacid tablet</li> <li>✓ Stopwatch</li> </ul>	<table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>○ Stir rod</li> <li>○ Scoopula</li> <li>○ Mortar and pestle</li> <li>○ Graduated cylinder</li> <li>○ Marker</li> <li>○ Eyedropper</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>○ Water</li> <li>○ Thermometer</li> <li>○ Kettle</li> <li>○ Scale</li> <li>○ Weigh boat</li> <li>○ Oil</li> <li>○ Salt</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>○ Sugar</li> <li>○ Acetic Acid</li> <li>○ Ice</li> <li>○ <i>Other:</i> _____</li> </ul> <p style="text-align: right;"><i>(provided by student)</i></p> </td> </tr> </table>	<ul style="list-style-type: none"> <li>○ Stir rod</li> <li>○ Scoopula</li> <li>○ Mortar and pestle</li> <li>○ Graduated cylinder</li> <li>○ Marker</li> <li>○ Eyedropper</li> </ul>	<ul style="list-style-type: none"> <li>○ Water</li> <li>○ Thermometer</li> <li>○ Kettle</li> <li>○ Scale</li> <li>○ Weigh boat</li> <li>○ Oil</li> <li>○ Salt</li> </ul>	<ul style="list-style-type: none"> <li>○ Sugar</li> <li>○ Acetic Acid</li> <li>○ Ice</li> <li>○ <i>Other:</i> _____</li> </ul> <p style="text-align: right;"><i>(provided by student)</i></p>
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## EXPERIMENTAL PROCEDURE

1. Put on safety goggles.
- 2.
- 3.
- 4.
- 5.
- 6.

### Clean up:

- Pour the contents of Beaker A and Beaker B into the sink and rinse glassware with plenty of water.
- Place all cleaned and dried glassware on your lab table.
- Have your teacher check your lab space: \_\_\_\_\_ (teacher initial)
- Wash your hands and high five your partner.

## DATA

**Table 1. Experimental Observations**

	Trial 1	Trial 2
Independent Variable		
Qualitative Observations		
Quantitative Observations		

## ANALYSIS & CONCLUSION

1. What was the effect of your independent variable on the reaction time?
2. Was your hypothesis supported, partially supported, or not supported (rejected)?
3. What would you do differently if you were to perform this experiment again?
4. Write a **short paragraph conclusion** about this lab. Be sure to answer these questions in your paragraph:
  - a. What did you discover?
  - b. Was your hypothesis supported, partially support, or not supported?
  - c. What sources of error may have affected your results?
  - d. If you were to redo the experiment, what changes would you make?
  - e. What can you conclude in this experiment?

		Emerging	Developing	Proficient	Extending
Questioning & Predicting	Hypothesis	Hypothesis is not in "If... then..." format. OR hypothesis is in "if...then...because" format, but scientific reasoning is incorrect	Hypothesis is in "If... then..." format, but scientific reasoning is vague	Hypothesis is in "If... then..." format with plausible scientific reasoning.	Hypothesis is in "If... then..." format with plausible and detailed scientific reasoning.
Planning & Conducting	Variables	Independent, dependent, and controlled variables are not correctly stated.	Independent, dependent, and controlled variables are correctly stated, but not controlled.	Independent, dependent, and controlled variables are correctly stated, measured and controlled.	Independent, dependent, and controlled variables are correctly stated, measured and controlled with repetition and multiple trials.
	Procedure	Procedure steps are unclear	Procedure steps are somewhat clear	Procedure steps are clear	Procedure steps are clear and efficient; procedure could be replicated by another person/group exactly
	Data & Observations	Data and observations are not measured and recorded with accuracy, precision and units Not enough data is collected to support hypothesis	Data and observations are measured and recorded. Minimal data is collected.	Data and observations are measured and recorded with accuracy and precision using correct units. Data collection is thorough.	Data and observations are measured and recorded with accuracy and precision using correct units and impressive organization. Data collection is extremely thorough
Processing & Analyzing	Conclusion	Results of experiment are not used to draw conclusions.	Results of experiment are used to draw conclusions (hypothesis supported, not supported, inconclusive) but lacking scientific reasoning	Results of experiment are used to draw conclusions (hypothesis supported, not supported, inconclusive) are drawn with scientific reasoning.	Results of experiment are used to draw conclusions (hypothesis supported, not supported, inconclusive) are drawn with detailed scientific reasoning.
Evaluating	Sources of Error	Sources of error and improvements are not identified.	Sources of error and improvements are included, but not explained.	Sources of error are identified and suggestions for improvement are explained.	Many plausible sources of error and suggestions for improvement are explained

This lab report is due on: \_\_\_\_\_