

Lesson 4 Student Worksheet

Student Activity

Predict: How does the temperature of water affect how fast an effervescent antacid tablet will dissolve? Underline your choice and then explain your answer.

An effervescent antacid will dissolve

- a. **fastest in hot water**
- b. **fastest in cold water**
- c. **at the same rate in hot and cold water.**

Explain:

Materials:

- 6 effervescent tablets (save 2 tablets for the experiment in Part 2)
- clear plastic cups
- thermometer
- timer
- Hot water
- Ice
- Room temperature water

Create your own procedure: Using the above materials, come up with an experiment to test if the temperature of the water affects how fast the effervescent antacid dissolves. Rules:

- You can only use one effervescent antacid in each test
- You cannot change the effervescent antacid in any way
- All 4 of your effervescent antacid tablets must be used in the experiment
- You must measure and record data (time and water temperature) during the experiment using the instruments provided.
- Make sure that you measure the amount of time it takes for the tablet to disappear and **not** the amount of time that it takes the water to stop fizzing.

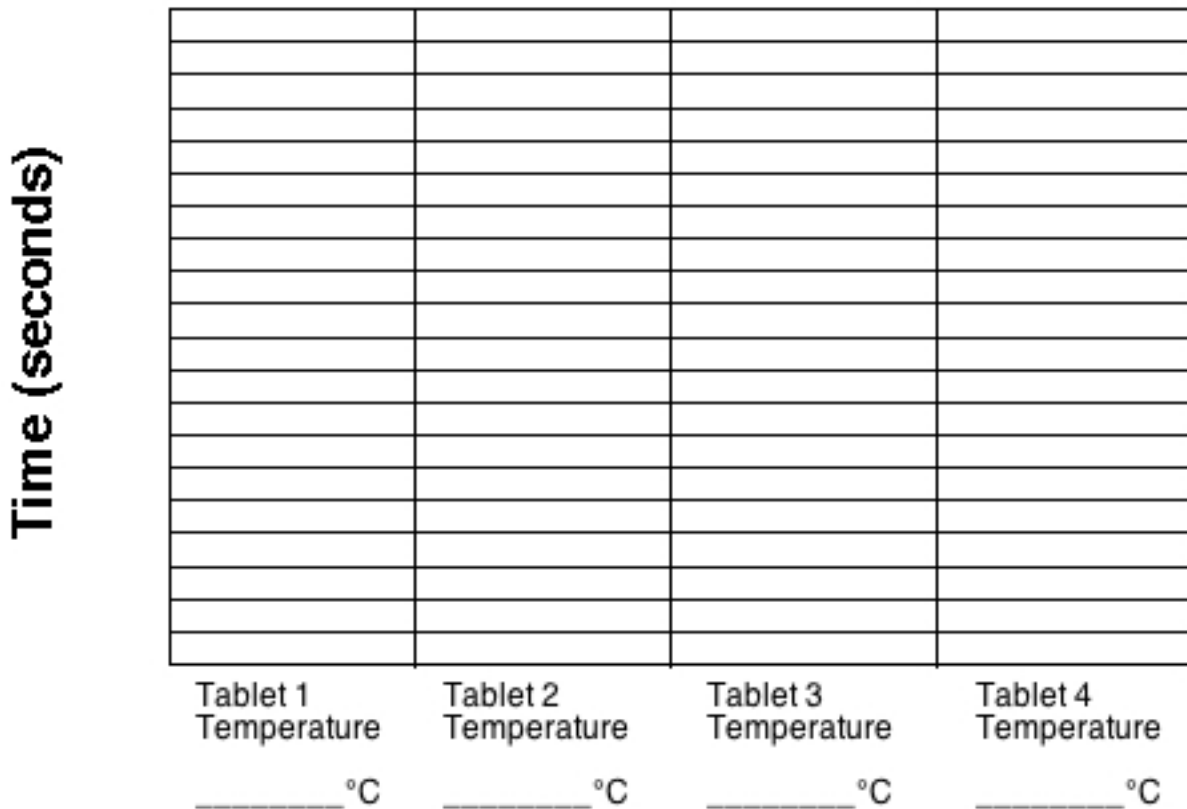


Check with your teacher before starting the experiment

DATA

Effervescent antacid tablets	Water Temperature (°C)	Time for tablet to dissolve (seconds)	Notes
Tablet 1			
Tablet 2			
Tablet 3			
Tablet 4			

Plot your data in the bar graph below. Make sure that you label the time axis with seconds.



Analysis of Data:

Carefully analyze the data that you recorded in your table and graph. Do you see a relationship between water temperature and the amount of time that it takes for a tablet to dissolve?

Based on your data, answer the following questions:

How does the temperature of water affect how fast an effervescent antacid tablet will dissolve? Write your answer in C-E-R format:

Claim:

Evidence:

Reasoning:

PART 2

As group, discuss what else you can do to the tablet to make the tablet dissolve even faster. It is very common for scientists to change one variable at a time to investigate how it affects the results. In this section, you will determine the time that it takes for the tablet to dissolve with the change that you are proposing. You should also consider measuring a tablet without your proposed change so that you can compare your results. Record your ideas below

Predict: What variable are you going to change and predict how it will affect how fast the tablet will dissolve.

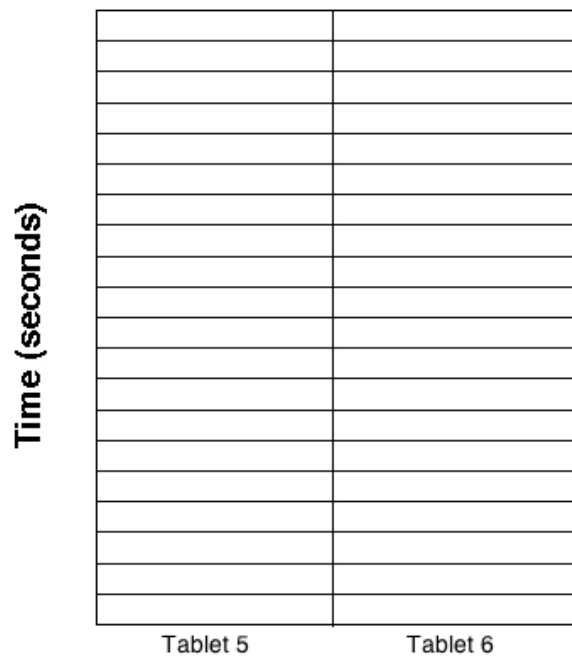


Check with your teacher before starting the experiment

Get another packet of an effervescent antacid and try out your experiments.

Effervescent Antacid Tablets	Time for tablet to dissolve (seconds)	Conditions changed in your experiment (what did you do in this test?)	Data/Observations (include data such as water temperature or other variables)
Tablet 5			
Tablet 6			

Plot your data in the bar graph below. Make sure that you label the time axis with seconds.



Describe your experiment including the change that you made (the variable) and your results.

Using the C-E-R format, write a claim about how your experimental change (the variable) affected the time that it took for the tablet to dissolve using your data (evidence) and reasoning.

Claim:

Evidence:

Reasoning:

Consider the results that you obtained in Parts 1 and 2. What factors make the table dissolve faster?

Based on your results, in what types of climates/environments (such as warm or cold, wet or dry) on Earth would chemical weathering be fastest?
