Experimenting with a Chemical Change

Experiment Activity

Materials (per group)

measuring cup
3 plastic cups, 10 oz
3 antacid tablets
resealable plastic bag
grid paper
safety goggles
water (room temperature)
clock with second hand
metal spoon

Material Substitutions

Effervescent candy tablets or bath tablets may be used in place of antacid tablets.

Advance Prep

Allow the water to sit out for several hours, until it is room temperature.

Hints and Tips

- Be sure to explain that to "completely break down" means that the tablet is completely gone, and there is no more "fizzing." There may still be some residue at the bottom of the cup.
- When using the tablet broken into four pieces, the pieces do not have to be exactly the same size.

Safety Note

- Remind students to clean up all spills immediately
- Remind students not to drink the liquid or eat any of the antacid.

Additional Comments

You may wish to combine the data from all groups for more accurate data collection. Any group with data that is very different from the class data may wish to repeat the experiment. This would be a good opportunity to discuss the necessity of repeating experiments to obtain more reliable results.

Activity Rubrics

Scoring Key				
	4 correct, complete, detailed	**3** partially correct, complete, detailed	**2** partially correct, partially complete, lacks some detail	**1** incorrect or incomplete, needs assistance

Experiment Activity

Experimenting with a Chemical Change

Scoring Criteria																															
Student made a hypothesis about an antacid tablet breaking down in water.																															
Student controlled variables and followed instructions to experiment with antacid tablets.																															
Student measured the time it took for the tablets to break down.																															
Student collected and interpreted data by making a chart and a bar graph.																															
Student communicated by stating conclusion.																															
Score **total points**																															
% equivalent																															

Name _____ Date _____

Experiment Activity

Experimenting with a Chemical Change

State the Problem

How does changing the shape of an antacid tablet affect how fast it breaks down in water?

Formulate Your Hypothesis

If you break apart or crush an antacid tablet, will it break down in water faster than, slower than, or at the same rate as a whole tablet? Write your hypothesis.

_____

_____

Identify and Control the Variables

The shape of the tablet is the **variable** you can change.

Test Your Hypothesis

1–6. Follow the steps on textbook pages B25–B26 to perform your experiment.

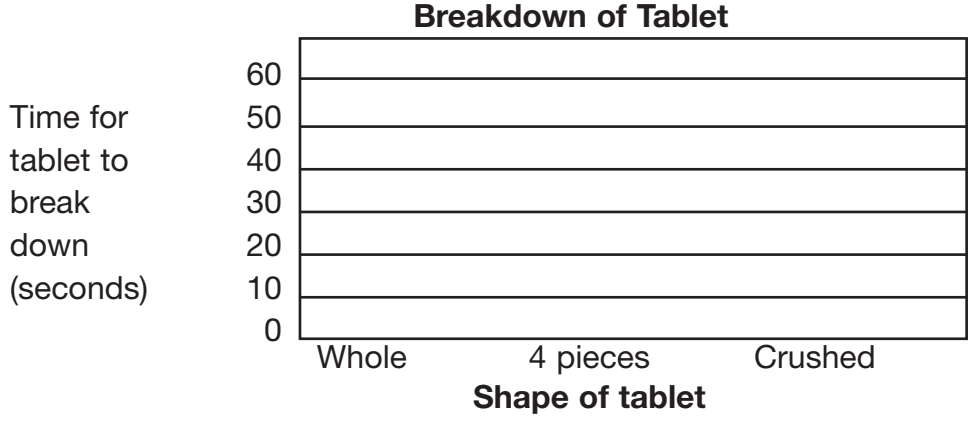
Collect Your Data

Record your data in the chart.

Trial	Tablet shape	Time to break down
1	Whole	
2	4 pieces	
3	Crushed	

Interpret Your Data

Use the data from your chart to make a bar graph.



Name _____ Date _____

Describe any patterns you see in the time it took for the tablets to break down.

_____

_____

_____

State Your Conclusion

How do your results compare with your hypothesis? Communicate your conclusion. Explain how changing the shape of the tablet affected the time it took to break down.

_____

_____

Inquire Further

If you increase the temperature of the water, will a tablet break down faster? Can you think of other ways to make the tablet break down faster? Develop a plan to answer these or other questions you may have.

_____

_____

Self-Assessment Checklist	
I made a **hypothesis** about an antacid tablet breaking down in water.	_____
I **identified** and **controlled variables,** and I followed instructions to perform an **experiment** with antacid tablets.	_____
I **measured** the time it took for the tablets to break down.	_____
I **collected** and **interpreted** data by making a chart and a bar graph.	_____
I **communicated** by stating my conclusion.	_____

Notes for Home Your child conducted an **experiment** to determine how the shape of an antacid tablet affects how fast it breaks down in water.
Home Activity: Ask your child to explain why a 5-pound block of ice would last longer in an ice chest than 5 pounds of crushed ice.

Name _____ Date _____

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