Do the Swing Thing!

When you move back and forth on a swing, what affects how much time it takes to do a certain number of swings? Let's try to find out.

Materials:

- Swing
- Watch with second hand
- Tape
- String
- Metal washers

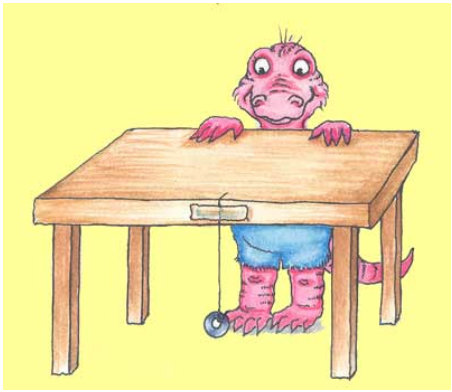
Procedures:

1. Sit on the swing and hang straight down. Your adult partner should pull you and the swing back as far as possible and then let go.

2. As you swing, do not “pump” with your legs or arms; just sit in the seat like you are a big weight.
3. Have your partner time how long it takes you to do 10 swings
4. Now have your partner pull you back about half as far and time how long it takes you to do 10 swings. Were the times pretty similar or very different?

Make a model of a swing

1. Cut a piece of string about 30 centimeters long. Use tape to connect one end of the string to the edge of a desk or table. Tie the other end to a metal washer. This is your model of a swing.



2. Pull the washer back and let go. Time how long it takes to make 10 swings. Now pull it back about half as far, let it go, and time the 10 swings again. Were the times pretty similar or very different?
3. To see if weight affects the time it takes to do 10 swings, tie another washer on. Pull the washers back the same distance as before and time the 10 swings. Were the times pretty similar or very different?

Think about this …

If you wanted to find out if the length of the swing affects the time it takes to make 10 swings, how would you do it? Would you use the same amount of weight with different length strings? Would you pull the strings back the same amount? Try doing a good experiment to see if the length of the swing matters in how long it takes to do 10 swings.

Where's the Chemistry?

A swing is like a pendulum. A simple pendulum can be made by attaching a weight to the end of a string. So a person sitting in a swing is like a big pendulum. A pendulum takes a certain amount of time to swing back and forth and so does a swing. By doing experiments, you can see that the weight at the end and how far it is pulled back don't have much of an effect on the time it takes for a swing or pendulum to swing. It is the length of the pendulum or swing that matters the most.

The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".