A Stickyometer!

Have you ever noticed the way peanut butter sticks to the roof of your mouth or how jelly can make your fingers sticky? These foods also stick to bread and crackers pretty well too! To see how sticky these foods are, you can make the famous stickiness tester - the Stickyometer!

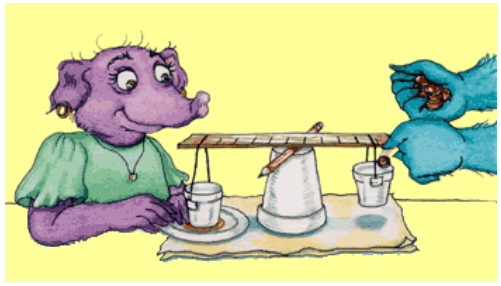
Materials:

- Large plastic cup (32 oz)
- 5 Styrofoam cups (8oz)
- Ruler
- Pencil
- String
- Peanut butter
- Jelly
- Pancake syrup
- Spoon
- Tape
- Pennies
- Aluminum foil
- Plastic wrap
- 4 small paper plates

Procedures:

1. Cover your work surface with newspaper. Turn your 32-oz cup upside down on the table. Balance the ruler on the cup.
2. Make a handle for one of the small cups out of string by taping the two ends of a piece of string to opposite sides of the cup near the rim. NOTE: The handle should be just long enough so that the bottom of the cup touches the table when the handle is placed over one end of the balanced ruler.

3. Make a shorter string handle for another small cup. Tape the two ends of a piece of string to this cup so that it will be about 3 inches (approx. 8cm) off the table when the handle is placed over the other end of the balanced ruler.
4. Hang the cups from opposite ends of the ruler and tape each cup handle to the ruler to hold the handles in place. Put a small paper plate under the cup with the long handle.



5. Using a spoon, smear a layer of peanut butter on the bottom of the long-handled cup and push the cup down onto the plate. Lay a pencil on top of the cup and underneath the center of the ruler.
6. You or your adult partner should hold down the paper plate while the other begins to put pennies, one at a time, into the other cup. When the peanut butter cup pulls away from the plate, count the pennies in the cup and record the number in the chart.

	Number of Pennies		
	Peanut Butter	Jelly	Pancake Syrup
Paper Plate			

A Stickyometer!

7. Use a new plate and cup and repeat your experiment using jelly and pancake syrup as you did with the peanut butter to see which one forms the strongest bond between the cup and the plate. Remember: You will need a new cup and paper plate for each different "food glue."
8. You and your adult partner can try mixing some of your food glues together to see who can come up with the stickiest glue! You can tell who wins by using your Stickyometer!

Think about this ...

How well each food glue works depends on more than just how well the glue sticks to the cup. It also depends on how well the glue sticks to the plate. Let's see if you can come up with the best combination of cup and plate materials that each glue sticks to best. You can change the material on the outside of the cup and plate by covering them with plastic wrap, wax paper, aluminum foil, or paper to see which combination works best with which food glue. Good luck!

Where's the Chemistry?

Materials like glue, tape, and paste are called "adhesives". Adhesives are used to stick two things together. For an adhesive to work, it must stick well to both materials being stuck together. For example: If you use paste to attach a feather to a piece of cardboard, the feather will stick well only if the paste sticks well to the feather and to the cardboard. Adhesives stick to materials by getting into the tiny dents, holes, spaces, pores, crevices, nooks, and crannies of the material that we normally cannot see without a microscope. The adhesive then hardens or gets tangled and caught in the tiny spaces of the material causing the adhesive to stick. For certain materials, it is easier for an adhesive to do this. That's why certain adhesives stick better to some materials than others.

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".