

## **How to Make a Measuring Stickiness Device**

Step 1 – Preparing the Plastic Cups (materials needed: two 6 oz. plastic cups, one-hole paper punch):

1. With the one-hole paper punch, make two holes just under the lip of the first 6 oz. plastic cup. The holes should be opposite each other on the cup. Note: be careful not to tear/break the plastic cup when you pull the punch away from the cup.
2. Repeat step 1 for the second plastic cup.

Step 2 – Preparing the String (materials needed: ruler or tape measure, scissors, string or yarn):

1. Take the string or yarn and measure 10 inches in length using the ruler or tape measure.
2. Cut the string.
3. Repeat steps 1 – 2.
4. There should now be 2 pieces of string or yarn, each 10 inches in length.

Step 3 – Attaching the Strings to the Cups (materials needed: two cups from Step 1, two pieces of string from Step 2):

1. Taking one plastic cup and one piece of string; thread one end of the string through one hole in the cup and tie a knot. Do the same for the second end of the string and second hole in the cup. Note: you may wish to double-knot the string so it does not separate from the cup during testing.
2. Repeat step 1 for the second cup and string.

Step 4 – Attaching the Cups to the Ruler (materials needed: cups from Step 3, tape, 12 inch ruler):

1. Take one cup and slide its attached string over one end of the ruler.
2. Move the string to the 1 inch or 11 inch mark (depending on which side you placed the cup) and tape it to the ruler.
3. Repeat steps 1 – 2 for the second cup on the other end of the ruler. Note: there should now be one cup hanging from the 1 inch mark of the ruler, and one cup hanging from the 11 inch mark of the ruler.

Step 5 – Preparing the Balance (materials needed: the cups and ruler from Step 4, glass/cup/jar 12 inches tall, pen/pencil, tape):

1. Take the 12 inch cup, and flip it upside down so the bottom of the cup is facing up.
2. Place the pen/pencil so that it is laying flat and centered across the bottom of the cup. Attach it to the cup in this position, using tape.
3. Rest the ruler (with attached cups) on the pen/pencil so that the 6 inch mark is centered on the pencil, forming a balance.

Step 6 – Preparing the Testing Surface (materials needed: balance from Step 5, aluminum foil or paper or plastic wrap):

1. Cut pieces of aluminum foil (or paper or plastic wrap) into 4 inch by 4 inch squares. Cut one piece for each one of the “household” glues you want to test.
2. Center one piece of foil underneath one of the cups now hanging from your balance. Attach this piece of foil to the work area using tape. Note: you may wish to spread the “household” glue onto the aluminum foil before sliding it under the cup.

Step 7 –Testing (materials needed: “household” glues, Step 6):

1. Spread roughly 1 T of “household” glue on the testing surface piece from Step 6. For example, spread 1 T of jelly on the aluminum foil surface.
2. Firmly push the hanging cup down into the glue, so that it becomes stuck to the sample. Note: the amount of pressure applied to pushing the cup down should be about the same for each test conducted.
3. Drop one penny at a time into the opposite cup (the one not stuck in the glue) until the glued cup releases from the testing surface. Note: each penny should be dropped from roughly the same height to ensure the same amount of force on the cup.
4. Count the number of pennies it takes to release the cup from the glue. Record this number in the data chart.
5. Remove the aluminum foil (holding the glue for this trial).
6. Clean the bottom of the testing cup.
7. Using a new piece of foil for each trial, repeat steps 1 – 6 until all “household” glues have been tested.