



Surface Tension Revisited

(Remember always ask permission and clean up after you are done)

Materials Needed:

2 clear drinking glasses or jars
Dish soap
50 or so pennies (or other small coins)
Cake pan
Pitcher of water

Directions:



Be sure your containers are very clean



Place one container in the cake pan and fill it to the brim (not too overfull, just full).



Slowly start adding pennies to the glass of water. Add them to the water with the penny in a vertical position, the thin side enters water first.



Continue to add pennies one at a time.



After several pennies get down at eye level and look at the water in the glass.



It might be curved above the brim of the glass. If not continue to add more pennies until you can see this.



In the second glass after you have filled it full to the brim add 1 drop of dish soap.



Do you have a prediction as to what might happen?



Begin to add pennies. What happened?

It is possible to put close to 50 pennies in the full glass of water, depending on how full the glass was filled. A thick-rimmed glass will look full even when the curve (called the meniscus) is a little below the rim. Then it is possible to put many more pennies in. A larger glass also increases the number of pennies that can be dropped. The water form actually forms a curve (meniscus) above the rim due to the surface tension, which is nothing but a bonding of the surface molecules. (All the molecules at the surface want to hold hands and don't want to let go.)

In the second glass, where detergent was present, this surface tension is broken. The bonding between the surface molecules is much smaller (The molecules don't want to hold hands so much anymore.) thus the water overflows much sooner.

Special Trick – Fun to do with parents

If you want to play a trick on someone this is what you can do. Before you invite someone to a contest of who can put in the most pennies in a full glass of water put soap in the other person's glass so they don't know. Then show them how to put in the pennies and begin taking turns putting in a penny. Their glass should overflow quickly. Be sure to tell them the trick and explain surface tension.