Penny Pool

Have you ever examined a drop of water that fell onto a sheet of wax paper? If so, you know that the drop wasn't flat. Instead, it formed a bead. This round shape results from tiny, unseen forces that exist in the smallest particles of water.

Materials
A dropper  Water  A penny  A quarter

To Do
Make a guess. How many drops of water can fit on the head of a penny without spilling over the edge? Write down your guess.
Now use a dropper to carefully add water to the head of a penny. Count each drop. Try not to splash the drops or move the penny. When you have finished, compare the actual number of drops with your guess. How close were you?
Let's make another guess. Based upon what you have observed, predict the number of drops that can fit on the head of a quarter. Then check your answer.

The Science
Water is made up of very tiny particles called molecules. Each water molecule is made up of two hydrogen atoms and one oxygen atom (hence its formula, H2O). This molecule can be represented by something that looks like this:

But there's more. Each hydrogen end takes on a positive charge. Each oxygen takes on a negative charge. The charges influence the way each molecule lines up with its neighbor. The negative end of one molecule lines up with the positive end of its neighbor. The positive end of another lines up with the negative end of its neighbor. This attraction results in a type of "skin" that holds together each bead of water. The skin is strong enough to stretch and hold in additional water molecules. That is why so many drops fit on the head of the coin. Break the attraction between neighboring molecules and the bead flattens by spilling water over the coin's rim.

Check It Out! Compare the way water droplets behave on waxed and unwaxed wood surfaces.