

# Water on a penny

The behavior of water, and its interaction with other objects, are fascinating to young children. In this activity your child will use a simple experiment to investigate water's surface tension, and also learn how to affect an experiment's outcome by changing just one of its variables.

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## Before the activity...

- Select a variety of pennies to use for the experiment – clean and dirty, new and old, etc.
- If your child has never used an eyedropper, show them how to squeeze the bulb, then hold the tip underwater while releasing their hold until the water is drawn up, then squeeze the bulb to push the water out. Practice squeezing out only one drop at a time.

## Supplies

- Pennies
- Cups with water
- Paper towels or wax paper
- Eyedroppers or pipettes

## Procedure

- Place a penny on a paper towel or piece of wax paper. Ask your child how many drops of water they think can fit on the surface of the penny.
- Ask your child to begin adding drops of water to the penny, counting each drop.
- The last drop before your penny overflows is how many drops of water it can hold. How close was your child's prediction? Ask them for a new prediction, and then repeat the experiment.

## Inquiry based questions

As your child explores, guide his or her curiosity by asking open-ended questions that cannot be answered with one-word answers.

- Why are some pennies shiny, and some are dull? Which one do you think would hold more water?
- Are your water drops large or small? Do you think they are all the same size?
- What will happen if you hold your dropper very close to the penny? What will happen if you hold it up high?

## Extension activities

- After experimenting with water, your child might like to repeat the experiment with other liquids. You might try liquid soap, vegetable or olive oil, soda, etc. How are your results different?
- Cleaning your dirty pennies is easy! Start by asking your child to sprinkle a small amount of salt onto each penny to be cleaned. Next use a dropper to add some vinegar to the salty penny. This combination of chemicals will remove a tiny layer of oxidized copper and reveal your penny's shine!
- After using a penny for this experiment, your child might like to try other coins and see which can hold the highest number of drops of water. Ask your child to predict which coin will hold the most, then try it out.
- To investigate water's surface tension further, invite your child to experiment with water droplets and wax paper. Your child can drip water onto the paper then suck the droplets back up with the eyedropper, drag them around the wax paper to combine, and make tiny droplets by just touching the paper with the dropper. You might also try adding drops of water to a paper towel. Ask your child why he or she thinks the water droplets behave differently on the two different pieces of paper.

## Resources

Books:

*Pennies* by Mary Hill

*A Drop of Water* by Gordon Morrison

Websites:

[http://www.usmint.gov/mint\\_programs/circulatingCoins/?action=CircPenny](http://www.usmint.gov/mint_programs/circulatingCoins/?action=CircPenny)