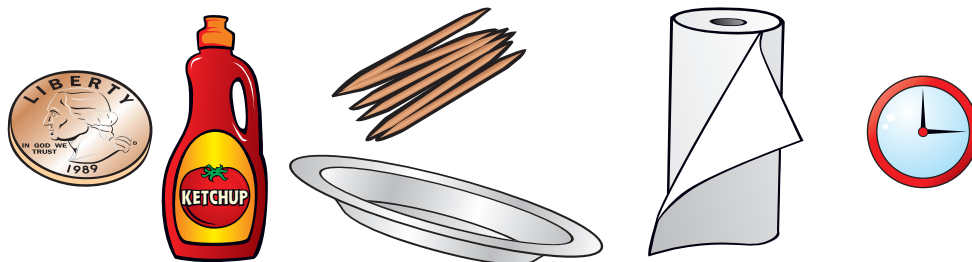


# Ketchup for a Penny



## What you need:

- Tarnished (brown) penny
- Ketchup
- Plate
- Toothpick
- Paper towel
- Clock or watch

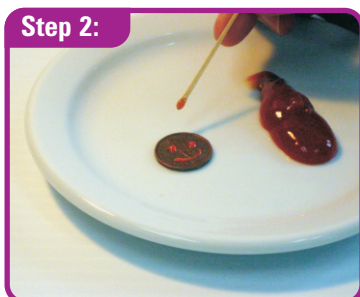


## What you do:

**Step 1:** Add ketchup to a plate.

**Step 2:** Use the toothpick to dab ketchup and make a pattern on the penny.

**Step 3:** Wait 1 full minute, and then wipe off the ketchup with the paper towel. What do you see?



## What's going on:

You just performed a chemical reaction! While new pennies are shiny, old pennies are covered in a brown coating called copper oxide. Copper oxide is formed when copper combines with oxygen, just like iron combines with oxygen to form rust. When you coated the penny with ketchup, the vinegar in the ketchup combined with the copper oxide and changed it into a chemical called copper acetate. Copper acetate can be wiped off the penny! The copper oxide coating that was in contact with the ketchup has been removed, so the spots look nice and coppery bright after the reaction. Any substance containing vinegar will also have this effect on a penny.

**Note:** Do not try this experiment with your coin collection because the chemical reaction removes some of the copper from the penny. This could ruin some of the fine details and lessen the value of a collector's coin.

## Now try this:

Try this experiment using different substances like soy sauce, vinegar, or toothpaste. How well do they work?

