

# Which Will Rust?

**Estimated Time: 30 minutes** with continuing activities through the week

## SUMMARY

A chemical change takes place when iron combines with oxygen to form iron oxide, better known as “rust.” After making predictions for various household items, the student will determine that a steel nail (which contains iron) will rust more rapidly compared to other household metal objects.

## WHAT YOU’LL LEARN

- Rusting happens to items that contain iron.

Materials Used	
<ul style="list-style-type: none"> <li>• Pennies</li> <li>• Aluminum foil</li> <li>• Steel nails (<i>not</i> galvanized)</li> </ul>	<ul style="list-style-type: none"> <li>• Resealable plastic bags (at least three)</li> <li>• Paper</li> <li>• Colored pencils</li> </ul>

## WHAT TO DO

1. Discuss rusting with the student to make sure all learners are talking about the same thing. Ask kids what types of objects rust: plastics, metals, food, etc. What objects have they seen that were rusted? What do they think caused these objects to rust? Make a “parking lot” of all the ideas the kids come up with. The parking lot can just be a simple piece of paper or a marker board.
2. Put out a penny, a small piece of aluminum foil, and a nail on the table. Ask the students what all these objects have in common. Ask them which one of these things will rust in water. Record their predictions on the piece of paper, drawing pictures or making a graph.
3. Put the penny in one of the resealable bags, then put the foil piece and nail in their own separate bags. Add about  $\frac{1}{2}$  cup of water to the bottom of each bag and put them to the side where they won’t be disturbed. Make sure the objects stay submerged.
4. Have the student check on their submerged objects every day, keeping a journal and taking notes about how the penny, aluminum, and nail have changed. The student might want to record color changes of the submerged object and changes to the water. Make sure the student records the date and time every time they make their observations.
5. After several days of observations, remove the objects from the bags and see which of them has rusted. Aluminum doesn’t rust (one of its really great properties) and the copper on pennies may turn green, but this only happens with acidic liquids.
6. After seeing which predictions are confirmed, revisit your “parking lot” to see if there are any new questions you would like to add.

## TIPS

- The “parking lot” of ideas is a great place to come up with your *next* investigation. Are there other objects the student might want to see if it will rust?
- Depending on the group of students, they might want to have their own individual set of bags. Make sure to label the bags with learners’ names in this case.
- A good way to display the bags without having them in the way is to hang them from a string with clothespins or tape them to a flat surface like a window.
- Galvanized nails have a coating of zinc on the outside to discourage rusting. Make sure your nails are *not* galvanized or you won’t see as much change.