

# JR-SCIENTISTS

## FRICTION IN A BOTTLE

Explore friction with a fun and simple activity that uses classic household supplies.

### INSTRUCTIONS:

**STEP 1:** Fill your bottle with the grains of rice.

**STEP 2:** Stick the pencil into the rice. Then pull it out.

**STEP 3:** Repeat until the rice is packed tighter and tighter. Eventually, the friction between the grains of rice will be so much that the pencil won't come out, and you can lift the bottle of rice with the pencil!

### SUPPLIES

Uncooked Rice  
Bottle  
(glass or plastic)  
Pencil

### THE SCIENCE

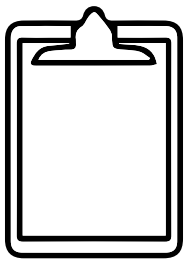
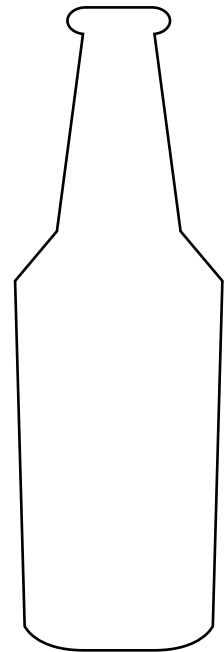
When you push the pencil into the bottle of rice, the grains are forced together to make room for the pencil. As you continue to push the pencil in, the grains move closer and closer together until they are rubbing against each other.

This is where friction starts to work. What is friction? Friction is the resistance to motion between two surfaces that are sliding, or trying to slide, across each other. Once the grains of rice are packed so closely together that the friction becomes overwhelming, they will push against the pencil with a strong enough force to make the pencil stuck, allowing you to pick up the whole bottle with the pencil.



# Friction Bottle Observations

Use this worksheet to process and evaluate your work.



RECORD

What did you observe?

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What force is being used to pick up the bottle with the pencil?

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What would happen if we used a different material in the bottle?

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What would happen if we used a different type of bottle?

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