raft® RESOURCE AREA FOR TEACHING

STEAM SCIENCE TECHNOLOGY ENGINEERING ARTS MATHEMATICS

LEARNING ACTIVITY

Orange You Glad?

Do Oranges Float or Sink?

Why do objects float or sink? In this activity, students explore buoyancy and density by observing whether objects float or sink in water.

Activity Challenge
Test whether objects float or sink in water.

Preparation

1. Review the Materials Needed list and collect materials.
2. Fill sink, bowl, or container with water, leaving about an inch to prevent spills.

To Do

1. Create a table to record the predictions and observations. See the table on the last page for an example.
2. Record predictions for each object that will be tested.
3. Place an orange in the water. Record what happens.
4. Peel the rind off of the orange. Place skinless orange in the water. Record what happens.
5. Test other objects in the water one by one. Record what happens.

Observations

1. What happens to an orange when it has its rind and it's put into the water? Why does this happen?
2. What happens to an orange when its rind is peeled off and it's put into the water? Why does this happen?
3. What objects around your house will sink? What objects will float?

Extensions

- Research positive buoyancy, negative buoyancy and neutral buoyancy. Why are these terms important when building a boat?
- Build boat out of household items that successfully floats in water. Design an anchor that will hold the boat in place without sinking it.

Materials Needed

- Orange (or tangerine, lemon, or lime)
- A deep bowl, cup, container, or sink
- Water
- Household items (apple, paper clip, coin, cork, etc.)
- Paper, pen/pencil

Grade Range
3-5

Topics/Skills
Physical Science
Buoyancy
Density

Learning Standards
NGSS: Physical Science

Duration
20 minutes

Prep Time
5 – 10 minutes

The Science behind the Activity

Objects will either float or sink depending on their densities. If an object has a relatively low density, it will float. If an object has a relatively higher density, it will sink. An object's mass (amount of substance that makes up an object) and volume (amount of space an object takes up) determines the density. If an object's density is less than the water's density, then it will float on water's surface, otherwise it will sink. When students put the orange in the container of water it probably floated on the surface. After the rind was removed, it probably sunk to the bottom. This is because the rind of an orange is full of tiny air pockets, which gives the orange a lower density than water, allowing it to float on the surface. Removing the rind from the orange increases its density when compared to water, making it sink to the bottom. Fruits like lime, however, have rinds with fewer to no air pockets, which makes them sink with or without their rinds.

Object	**Prediction** *Will the object sink or float?*	**Observation** *What happened to the object when you placed it in the water? Why do you think this happened?*
Orange		
Orange with no rind		
Quarter		
Lime		
Paperclip		
Apple		