

How Many Crayons Could Your Boat Float... If Your Boat Could Float Crayons?

Objective:

Students will experiment with floating and sinking by creating clay boats, predicting the weight load the boats can hold and then testing the boats.

Key Concept:

Objects float or sink based on not only the weight, but also the shape and water displacement.

Supplies Needed:

- Crayola® modeling clay
- Crayola® crayons
- basin or sink of water
- salt

Procedure and Results:

1. Provide each child with a piece of modeling clay that should be rolled into a ball. Ask them if the balls will sink or float when placed into water. Test and have students draw illustrations to record the results.

2. Have each child use the same ball of clay to create a boat. Ask if the boats, made out of the exact same clay that just sunk, will float or sink. Test and have students draw illustrations to record the results.

3. Ask students to predict how many crayons their boats could float (if their boats could float crayons). Test the boats. After all the boats have sunk add salt to the water (stir until dissolved). The crayons and the boats could float in the salt water, depending on the salt concentration.

4. Explain that a clay boat floats if the boat is formed in certain ways. The surface area of the bottom of the boat must be large enough to displace an amount of water that weighs exactly as much as the boat weighs. And the inside of the boat must be hollow (filled with air). If the clay was just flat with no curved sides to hold air inside, it would sink just like the balls did. The amount

of weight (number of crayons) the boat can hold before it sinks depends on the size and shape of the boat. Eventually, every boat will sink when it holds too much weight for its size and shape. Salt water is more dense than regular water. Items that sank in regular water will float, if enough salt is added.

