**Materials:**

Plastic cups, various sizes

50 pennies

Triple beam balance

Ruler

**Directions:**

1. Place a penny in a basin of water. What happens?
2. Place empty cup in basin of water. What happens?

Measure the height of the water along the side of the cup.

1. Add a penny. Measure the height of the water again.
2. Repeat until the cup sinks.
3. Weigh the pennies.
4. Record the volume of the cup listed on the package.
5. Repeat with the larger cup.

|  |  |  |
| --- | --- | --- |
| **# pennies** | **Small cup** | **Large Cup** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
| 15 |  |  |
| 16 |  |  |
| 17 |  |  |
| 18 |  |  |
| 19 |  |  |
| 20 |  |  |
| 21 |  |  |
| 22 |  |  |
| 23 |  |  |
| 24 |  |  |
| 25 |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Mass of pennies** | **Volume of cup** |
| Small cup |  |  |
| Large cup |  |  |

1. How did the cups differ?
2. What makes things float or sink?

## **Directions:**

1. Use a 15 cm x 15 cm piece of foil to build a boat that can hold pennies.

*Draw a picture of your boat.*

1. Now put your boat in the water.

*How does your boat float? Does it float evenly? Does it tilt to one side or another? Draw your boat floating.*

1. Place pennies one by one into your boat. Place them in gently.
2. In the table below, record the number of pennies each team member’s boat holds before sinking.

|  |  |
| --- | --- |
| **Name** | **Number of Pennies** |
|  |  |
|  |  |
|  |  |
|  |  |

1. How did the shapes your team’s boats differ?
2. How did the number of pennies compare to the shapes of the boats? Is there a relationship between shape and number of pennies?
3. What happens when all the pennies are placed on one side of the boat? Why do you think that happens?
4. What pushes the boat down in the water? What prevents it from sinking?