

## The Chip Floater

**Purpose:** To design a boat to support the greatest number of chips.

**Materials:** water, tray, chips, aluminum foil, ruler

**Background research:**

***Buoyancy** – an upward force or upward push that depends on how much fluid is pushed out of the way. For an object to stay buoyant, it must displace the volume of water that equals the mass.*

**Procedure:**

- 1) obtain container filled with water.
- 2) take a 15 cm x 15 cm piece of foil and design a boat of any rectangular dimension you wish (one exception – no flat boats.) **Note:** Boats must be rectangular shaped so that you can measure length, width and height.
- 3) measure the boats dimensions (length, width and height.) Calculate its volume (capacity to push water out of the way.)
- 4) predict the number of chips your boat will hold and record it in the chart below.
- 5) carefully place as many chips, one at a time, into the boat as you can until it sinks.
- 6) count and record the number of chips for that size and shape boat. Then try again (using the same tin-foil) different boats with different dimensions.
- 7) calculate mass of chips: one (1) chip = .5 g.

**Data:**

<b>Trial #</b>	<b>Length (cm)</b>	<b>Width (cm)</b>	<b>Height (cm)</b>	<b>Volume (cm<sup>3</sup>)</b>	<b>Prediction</b>	<b>Actual</b>	<b>Mass (g)</b>
<b>1</b>							
<b>2</b>							
<b>3</b>							
<b>4</b>							
<b>5</b>							

**Conclusion:**

What size and shape boat holds the most chips?

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List three (3) possible sources of error that could occur when completing this lab activity.

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