

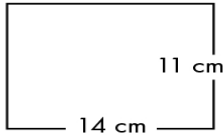
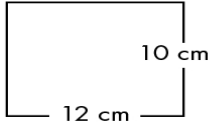
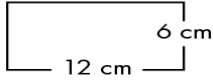
# Can Your Boat Float? Sample Answer Sheet

Your challenge today is to design a boat made of aluminum foil and see how many pennies it will take to sink it. You need to try three different designs, make a hypothesis about your design and graph the results of your experiment.

## The Task

1. Have one person in your group collect aluminum foil, a ruler, scissors, pennies, a container half-filled with water and graph paper.
2. Cut three (or more, if you have time) 16-cm-square pieces of foil.
3. Create a boat with each piece. Each boat must have a flat bottom.
4. Find the area of the bottom of your boat. If it is a rectangle, a triangle or a circle, you can use a formula to find the area. If it is an irregular shape, use graph paper to estimate the area.
5. Record the area on this handout and draw the shape of the bottom in the space below.
6. Write your group's estimate of how many pennies it will take to sink the boat.
7. Put your boat in the water and add pennies until it sinks. Count the pennies as you add them. Record the number of pennies it takes. Include the penny that sinks the boat in your count.
8. Create a graph of your data. Put the area of the boat on the horizontal axis (the x-axis or independent variable) and the number of pennies on the vertical axis (the y-axis or dependent variable).
9. Write two sentences that explain if your estimate was accurate and why you think the design of the boat had an effect on the number of pennies you could add to the boat.

## Example

Trials	Boat 1	Boat 2	Boat 3
<b>Boat Design</b>			
<b>Area of Bottom</b>	154 cm <sup>2</sup>	120 cm <sup>2</sup>	72 cm <sup>2</sup>
<b>Number of Pennies — Estimate</b>			
<b>Number of Pennies — Actual</b>	61	49	20