

## Elementary Trades and ADST Projects at Home

**Project:** Float my boat

**Time required:** 45 minutes

**Theme:** Boat building and Design Thinking

**Objective:** Students are challenged to create a boat or raft, made of only aluminum foil, which will hold as much weight as possible. By using Design Thinking Strategies, students will design, build, test and revise their prototype to discover the most successful design. This challenge can be used as a lead-up to the Skills Canada Cardboard Boat Challenge. <http://skillsbc.ca/pdf2017/carboardboatchallengepackage.pdf>

**Grades:** K-7

**Tools and Materials:** Aluminum Foil, pennies/change (or other small weighted objects), ruler, container of water.

**Procedure:**

1. Gather your materials: 6 inch by 6 inch squares of foil (6), pennies/change, ruler and a container of water



2. Create a boat or raft by bending your foil and draw your design in the data table.



- Record a prediction of the number of pennies you think your boat will hold before sinking in the data table.
- Test your design by floating your boat and adding one penny at a time until your boat sinks. Record the number of pennies your boat held, not including the one that led to the sinking, and enter your results in the data table. Repeat steps 2-4 to complete, and record data for three different boats.



- Create new designs by using what you have learned and record your results in the data table.

Draw	Predict	Results
Boat height 1.5" width 1.5" length 4" 	20 coins	13 coins
height 2.5" width 1.5" length 4" 	15 coins	21 coins
height 1.5" width 1.5" length 4" 	15 coins	23 coins
height 1.5" width 1.5" length 4" 	10 coins	11 coins
height 1.5" width 1.5" length 4" 	20 coins	14 coins
height 1.5" width 1.5" length 4" 	25 coins	23 coins

Draw your design with measurements of side height, length of bottom and width	Predict the number of pennies this design will hold before sinking	Record the number of pennies your boat actually held before sinking
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Initial design (steps 2-4)

1.		
2.		

3.		
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Revised Designs (step 5)

4.		
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5.		
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6.		
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### **Extensions:**

Use different materials such as wood or Styrofoam to create additional designs and compare results.

Research boat design to improve on your results

<https://www.pinterest.ca/pin/25684660352135326/>

### **Self-Assessment:**

1. Which boat designs worked best? Why?
2. Did the loading procedure matter? What loading procedure worked best?
3. Did the material used make a difference? What was the best material?
4. What would you try different next time?

## **Resources and Links:**

<http://diyclassroom.weebly.com/> (ADST projects at home)

<https://curriculum.gov.bc.ca/curriculum/adst> (ADST Curriculum)

<https://www.pinterest.ca/pin/25684660352135326/> (boat design ideas)

<https://www.rcampus.com/rubricshowc.cfm?code=HX9783W&sp=yes&> (ADST Assessment Rubric)

<http://skillsbc.ca/pdf2017/carboardboatchallengepackage.pdf> (Skills Canada Cardboard Boat Challenge)