

Name: _____

Date: _____

Sailboat Design

Context

Using design and fabrication processes used by the boat industry, you will construct a sailboat. Certain specifications and limitations will be followed, and you will use tools to develop your sailboat from the materials provided.

Challenge

You are to design and construct a sailboat that is propelled by the wind from a fan that will travel a specified distance in the least amount of time.

Procedure

1. First you will design your sailboat.
2. Next you will cut out the parts necessary to make your sailboat.
3. You will then build your sailboat according to your plans.

Materials and Equipment

Aluminum foil, straw, 12" masking tape, file folder, paperclips, scissors, and ruler.

Evaluation

Your sailboat should be built according to the plans you created and will meet the requirements listed in the "Limitations" and "Instructions".

Grading rubric for your project will be as follows:

- | | |
|-----|--|
| 100 | Project was completed in accordance to instructions. |
| 90 | Project was completed with minor errors. |
| 80 | Project was completed with errors. |
| 70 | Project was completed with major errors. |
| 60 | Project was not completed. |
| 50 | Project was not attempted according to procedures. |
| 0 | Project was not attempted. |

LIMITATIONS

1. Sailboat must complete course.
2. Sailboat must be propelled wind from fan only.
3. You may not utilize any other material to build or to propel your sailboat.
4. You may not push the sailboat.

INSTRUCTIONS

1. Sailboat will be raced in the two tracks provided.
2. Sailboats will be raced two at a time.
3. Winners will continue racing until a winner is determined.

The sailboat that travels the specified distance in the least amount of time will be declared the winner.

Using the Engineering Design Process to create a Sailboat

Category	
Identify the Challenge (limitations, existing products, ideas)	Write the challenge: <hr/> <hr/> <hr/>
Explore Ideas (brainstorm, write down ideas, make sketches)	Make 3 small sketches of your ideas. Include labels:
Plan & Develop (determine scale, final drawing, get tools and materials, build prototype)	Make final sketch, show the instructor, and get materials.
Final Design Explanation (Which design will you build and why?)	Which design did you choose, and why? <hr/> <hr/> <hr/> <hr/>
Test Idea (test the product, ask people if they like the new product, analyze survey data, Redesign the product)	Test your idea. What could you have done to improve your sailboat?
Present the Solution (Apply for a patent for the product, Make a commercial, Sell the new product, Analyze profit/loss results)	Be prepared to explain how your sailboat works and why it will go the fastest to the class.