Name(s)	Project Number
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Project Title

How Does the Shape of a Sail Affect the Speed of a Boat?

Abstract

Objectives/Goals
Our objective was to learn how the shape of a sail affected the speed of a boat. Our hypothesis was that all of the sails would go the same speed because we made sure that all of the sails had the exact surface area, 156 square centimeters.

Methods/Materials
Our materials were a rain gutter, one wooden boat, sail cloth, a triple beam balance scale, an enclosed room, a hair dryer and a meter stick. We tested our project by attaching a sail to the wooden boat. We then set it down in the rain gutter, which was filled with water. Next, we blew air at the boat with a hair dryer, which was set up at the end of the gutter. We then tested that sail four more times and recorded the speed of the boat as it traveled from one end of the gutter to another. We then switched out the old sail type with a new one and repeated the process.

Results
Our results were that the triangular sail (with the point up) went considerably faster than the other sails.

Conclusions/Discussion
Our research seems to indicate that our hypothesis was incorrect, as the triangular sail (with the point up) went much faster than the three other sail shapes. We believe that this happened because the triangular sail had more surface area at the bottom of the sail, causing it to have more dynamic lift. Dynamic lift is a term in sailing that means that the boat is being pushed up and out of the water. If this occurs, there is less of the boat touching the water, causing less drag, which, in turn, makes the boat go faster. This project helped widen our knowledge on the topic of sailing and could be useful to a sailor.

Summary Statement

In our project we were testing to see how the shape of a sail affects the speed of a boat.

Help Received

Father helped attach sails to boat and helped hold the hair dryer in place. Mother bought sail cloth.