



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: hydraulics

Finalist's Name: Aiden Mayer

School and City: wiggins middle school, wiggins

Sponsor's Name: Robert Mayer

Category: Engineering (ENGR)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

Abstract

Hydraulics

Aiden Mayer

The purpose of hydraulics was to figure out how and why hydraulics work. I hypothesized that if I followed the properties of hydraulics correctly, I could take a lightweight and lift a much heavier weight.

This project included building a hydraulic system using PVC. I then tested the ability for the hydraulic system to work by adding weight to the pistons and platform. I then tested different weights the hydraulic system could lift.

The results supported my hypothesis that a hydraulic system makes lifting easier. For example in my results, a 7 pound kettlebell could lift a 25 pound kettlebell and move it with ease.

My idea of hydraulics have changed a lot throughout doing this project. At first I thought it was only electrically powered. I now realize that it can multiply the force using pressure and volume. We use hydraulics everyday. Hydraulics is a system that takes potential and kinetic energy to make a lighter force move a much heavier object, like a kettlebell or even a car.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature: *Aiden Mayer*

Date: *2/29/24*

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.