



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Fionna M. Jensen	Project Number J0210
Project Title How Does the Diameter and Type of a Pulley System Change the Force Needed to Lift 5 lbs?	
Objectives/Goals My goal was to learn how pulleys can be used to make lifting heavy objects easier. I wanted to see if pulley size made a difference. I started by hypothesising that larger diameter pulleys would require less force.	
Abstract	
Methods/Materials I chose to limit my project to two different sized pulleys and three different pulley systems. By using different pulley sizes I could see if diameter affected the force required to lift a 5 lb weight. By using different pulley systems I could see if diameter alone affected force.	
Results My experiments showed that there was no difference in force required between the two different sized pulleys when used in a fixed system. However, when these two sizes were tested under systems with multiple pulleys the smaller pulley performed better in the movable system while the larger pulley performed better in the combined system.	
Conclusions/Discussion My hypothesis was wrong because my results didn't support my hypothesis. Pulley diameter is less important in reducing force than is the way the pulley is used. I now know that when pulleys are combined in certain ways they can reduce the force required to lift heavy objects. What I wasn't able to test was why the force was reduced. I think it may be along the pulley surface but that will have to be another experiment.	
Summary Statement How can pulleys be used to reduce the force required to lift heavy objects?	
Help Received Parents helped obtain materials and build the pulley frame.	