Name(s)	Project Number
Maggie E. O'Rourke	**J0321**

Project Title

Deep Knee Bends

Abstract

Objectives/Goals
The objective is to find how much stress is put onto the knee using a mechanical model.

Methods/Materials
Made a wood and spring model of the knee to test how much stress is put onto the knee depending on the angle. Used wood, power drill and bits, screws, hinges, two springs (different sizes: 1 1/2 inch and 2 1/2), protractor, metric ruler, journal.

Results
When the mechanical knee was bent at the maximum point (which was 20 degrees), it put the most stress on the knee and the force doubled.

Conclusions/Discussion
Built a mechanical model of a knee to measure how much stress was put onto the knee depending on the angle. It is concluded when the knee is bent completely, (20 degrees) the most stress was put onto the knee as the spring expanded the most. The force doubled from a normal standing position (105 degrees) to when bent completely (20 degrees).

Summary Statement
I built a mechanical model of a knee to see how much stress is put onto the knee depending on the angle.

Help Received
My dad and I built the mechanical model, Ms. Katherine Moreno, my science teacher, helped me to understand Hooke's law, and Chris Donohoe helped me with my measurements and graphing.