CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
35049

Project Title
Does Density Affect the Speeds of Cans Rolling Down an Incline?

Abstract

Objectives/Goals
How does density affect the speed of a can of food rolling down an incline? From previous experience, I knew that a can with higher density should roll faster down an incline than a can with lower density. My hypothesis was that an empty can, the least dense, would roll the fastest.

Methods/Materials
I measured the mass of each 14.5 ounce can on a postage scale to determine density. I made a wooden ramp and I rolled twelve different 14.5oz cans filled with various soups and vegetables down the ramp. I recorded the speed of the different cans.

Results
Surprisingly, the empty cans rolled the slowest, so my hypothesis was incorrect.

Conclusions/Discussion
From further research, I realized that a solid cylinder rolls more quickly than a hollow cylinder because the mass in a hollow cylinder (a hoop) is concentrated farther from its rotational axis. The hollow cylinder (the hoop) therefore has higher rotational inertia to overcome than a solid cylinder. So the hollow cylinder (the hoop) is slowest.

Summary Statement
How density affects the speed of a cylinder rolling down an incline.

Help Received
Mother helped with timing the rolling cans. I used my brother's 9th grade physics textbook.