



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

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Project Title
Effects of Hardness vs. Softness on Roller Skate Wheels

Abstract

Objectives/Goals
The problem that I wanted to find out is, if you change the hardness of the roller skate wheel, does it affect the outcome of the speed or distance in which it will travel?
I feel that if you test the different types of wheels, it will change the speed. I think that because when you work with different types of hardness or softness the wheel is going to roll differently such as a ball most likely will bounce differently.

Methods/Materials
The procedures are:
1) Obtain a flat even surface that is at least 100 ft or more.
2) Build a ramp.
3) Place the wheel guides. From point A to B= 1 ½ in.
4) Place the wheel guides. From point C to D= 3 in.
5) Obtain different types (soft or hard) of wheels.
6) Place the wheels above the metal gate at the top of the ramp in the guides so when you release the gate the wheels can roll down the ramp.
7) Test each wheel in distance
8) Test wheels in seconds (time each wheel one at a time and record the seconds when the wheel reaches the mark of 20 feet).
9) Record tests.
10) Repeat tests 5 times for each wheel on both time and distance
11) Convert the feet into centimeters
12) Figure the speed that each wheel traveled.
Materials:
1) Different types (soft or hard) of wheels
2) A ramp (pieces to make the ramp are below)
3) 1- 30in. x 55in. piece of plywood # in.
4) 3 # 1in. x 3in. x 8ft. pine boards
5) Cut into pieces of 10 # 1x3x6 in. pine board
6) Cut into pieces of 10 # 1x3x12 in. pine board
7) 1- 2x4 in. x 6 ft. (or x 8 ft.) cut into 2- 2x4x18 in.
8) 1- 4x27in. piece of metal that you can pull up by using it as a gate.

Summary Statement
Testing the effects of hardness vs. softness on roller skate wheels for speed and distance.

Help Received
Dad helped build the ramp for testing, mom helped photograph and product testing, brother helped with mathematical formulas.