California Science Center

CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)

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J0113

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)

Does ABEC Rating Affect the Amount of Friction Produced by a Skateboard Bearing?

Division

X **Junior (6-8)** _ **Senior (9-12)**

Preferred Category (See page 5 for descriptions.)

9 - Fluid Mechanics/ Aerodynamics/ Thermophysics

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)

Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

OBJECTIVE- to find out if the ABEC rating given to a skateboard bearing affects how much friction is produced

METHODS- three different tests testing static and kinetic friction. TEST 1- roll skateboard down ramp-measure distance covered-record data-repeat 10 times for each bearing set TEST 2- set skateboard on flat wooden plank-place pennies under 2 corners of plank so it tilts-continue until skateboard roll down at least 10 cm-record pennies used- repeat 5 times for each bearing set TEST 3-place drill bit on drill-place drill on skateboard wheel-turn on drill for 5 seconds at full blast so wheel turns- after 5 seconds take off drill-time how long wheel spins-record data-repeat 5 times for each bearing set

MATERIALS- TEST 1- skateboard, 4 different bearing sets, ramp, sidewalk, tape measurer TEST 2- skateboard, wooden plank, 4 different bearing sets, pennies, level ground TEST 3- skateboard. 4 different bearing sets, drill, drill bit, second-hand-watch, stopwatch

RESULTS- Within a brand, as the ABEC rating increased, friction decreased. But when I compare between brands, no direct relationship existed.

CONCLUSIONS- within a given brand friction decreases as the ABEC rating increases. However, no direct relationship exists when comparing bearings from various manufacturers. This may be the result of other factors that may affect friction (lubricants, design, materials, etc. which may vary between manufacturers.)

Summary Statement (In one sentence, state what your project is about.)

Does ABEC rating affect the amount of friction produced by a skateboard bearing?

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.

Dad supervised and helped glue display board.