



Curiosity Guide #209

Friction

Accompanies Curious Crew, Season 2, Episode 9 (#209)

Sliding Friction

Investigation #3

Description

What makes things slide? What prevents them from sliding? Find out in this enjoyable investigation!

Materials

- Wooden board, to serve as a ramp
- Objects to test
 - Book
 - Wood block
 - Spool
 - Rubber-soled shoe
 - Stack of books
- Meter stick
- Weights

Procedure

- 1) Place one of the objects on the end of the ramp.
- 2) Hold the meter stick vertically, next to the object on the board.
- 3) Slowly lift the board. At what height does the object begin to fall?
- 4) Try the same thing with other objects. Compare the various heights that the objects begin to fall.
- 5) Add weight to each object. Does the friction change?

6) **Something to think about:** What do you think would happen if you put different materials, like wax paper, sandpaper, or oil, on the surface of the board?

My Results

Explanation

When two things rub against each other, there is a force called **friction** that slows down the object's movement. At first the object experiences **static friction** on the board because it is not moving.

When the inclined plane moves up, the force of gravity continues to act on the object while the board provides **frictional resistance**.

Eventually, the pull of gravity will be stronger than the frictional resistance. The object will begin to slide.

Rolling friction requires much less height change to begin moving, making the spool or wheel more efficient than a flat-surfaced object. The rubber-soled shoe requires a significant height change because of the high friction the rubber material creates. That is why rubber is a preferred sole on shoes! The rubber prevents slipping and gives the person good traction.

Something else to think about: Have you ever tried to slide something heavy across the floor? That can be really hard, especially if the floor is carpeted. Air tries to slow down airplanes, water resists boats, and the playground slide slows us down, too. You may have noticed that the smoother something is, the less friction there is to slow us down. Wheee!

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