

Friction Board with Blocks

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Time Taken: ~ 15 min

Objectives: (optional)

The students will:

- Understand concept of friction
- Be able to calculate the coefficient of static friction of the incline

Materials:

- Incline
- Wooden blocks
- Mass hanger
- Scale
- Masses

Vocabulary: (optional)

- Friction
- Force
- Coefficient of static friction

Procedures:

- Raise incline to desired degree limit and place block on incline (make sure it doesn't slide down).
- weigh block
- Ask students why the block doesn't move at this incline? Isn't there a vector component of force in the direction down the incline?
- Write up (or have a student write out) the force balance equation for the block on the incline.
- Add weight to end of string (make sure it isn't enough to make the block slide up the incline).
- Have the students (or yourself) refine Newton's second law to incorporate the new force.
- Add small amounts of weight until the block starts to slide up the incline, now you know the force it takes to overcome the static friction force.
- From Newton's second law, have the students (or walk them through) how to solve for coefficient of static friction.