

Incline Plane - Friction Board with Blocks

Estimated Time for Activity: ~15 minutes

Optional Objectives:

The students will:

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

Materials:

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

Optional Vocabulary:

- Friction
- Force
- Coefficient of static friction

Procedures:

- Raise the incline to desired degree limit and place block on incline (make sure it doesn't slide down!).
- Weigh the 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) 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.