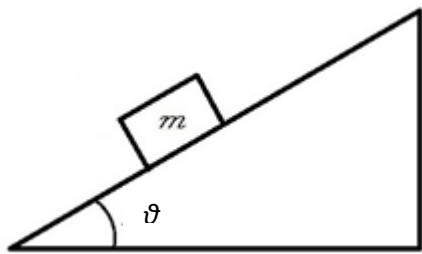


# AP-1 Things on a Slope I (Statics)

## Basic Situation

There are two ways to have a lonesome block on a slope that does not move:

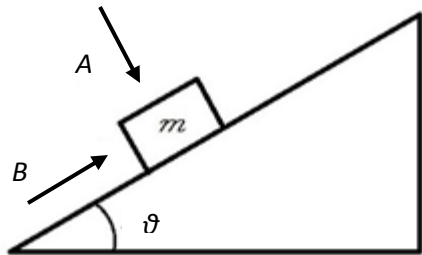
- Static friction



Draw a free-body diagram and explain how static friction supports the block.

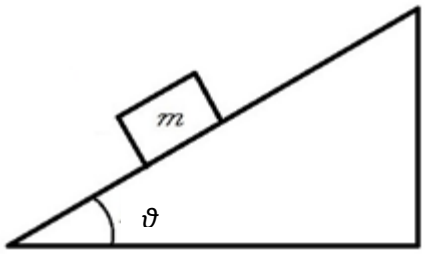
Why does the block slip if the angle increases too much?

- Another force(s)



Consider the two forces, A and B. Explain how each force prevents the object sliding down the slope. For each, state the balanced force equation (no need to solve). There IS friction. (i.e.  $\mu > 0$ )

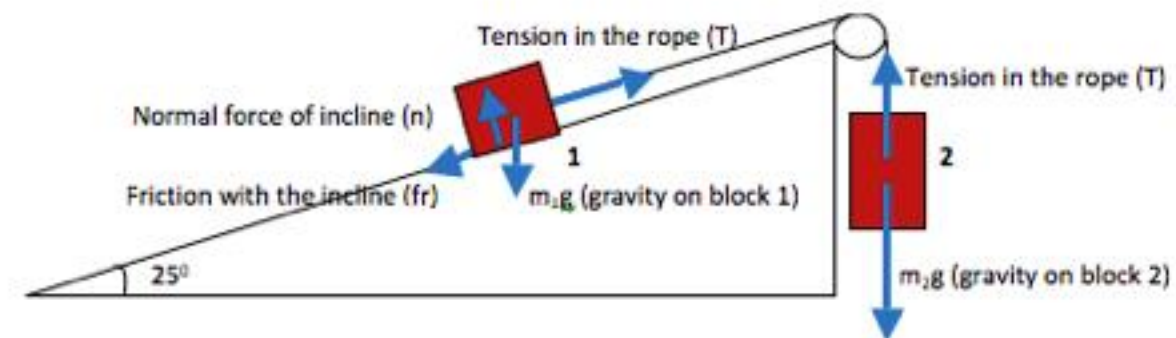
Force A	Force B



There is a lot of physics when slopes are involved. We can have:

- Statics – connected blocks
- Statics – friction
- Statics - supported
- Dynamics – connected blocks
- Dynamics – friction
- Conservation of Energy
- Rolling

## Connected Blocks



The other force may be due to the weight of another block connected by a piece of string. Usually we assume that the pulley has no mass or friction. Therefore, the tension in the string is constant. There are two approaches to this problem. This problem can be solved with or without friction. Assume that friction is present.

- a) Treat each block independently and produce two simultaneous equations.
- b) Treat the blocks as one unit. (Harder to do and more prone to error)