**PS1: Inclined Planes**

\*Answers use g = 10 m/s2

1. Lab partners Anna Litical and Noah Formula placed a 0.500-kg glider on their air track and inclined the track at 15.0° above the horizontal. Determine the acceleration of the glider along the frictionless track.
2. A 5.00 kg mass is released from rest at the top of a frictionless inclined plane as shown. Find:
   1. θ
   2. acceleration of the mass
   3. velocity at the bottom of the plane



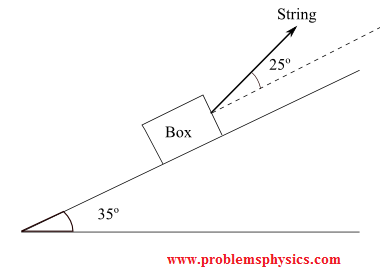
1. A 6.00 kg mass is released from rest at the top of a 2.00 m long inclined plane as shown. Find:
   1. acceleration
   2. time to go down plane
   3. velocity at bottom



1. A 4 kg block is pushed up an incline with a force of 60 N parallel to the plane. The force of friction acting on the block is equal to 5 N.
   1. What is the acceleration of the block if the plane is inclined at 20 degrees?
   2. The block is now released from rest at the top of the inclined plane. What is its acceleration down the incline? (Hint: The frictional force stays the same.)
2. A block starts from rest at the top of a frictionless 300 incline. What is the acceleration of the block?

**PS2: Inclined Planes with Friction**

1. A 5 kg crate slides down an incline of 250. The coefficient of friction between the crate and the incline is 0.25. What is the acceleration of the crate?
2. A 3 kg block starts from rest at the top of a 300 incline and slides a distance of 2 m down the incline in 1.50 s. Find:
   1. The magnitude of the acceleration of the block down the incline
   2. The coefficient of kinetic friction between the block and the plane
   3. The frictional force acting on the block
   4. The speed of the block after it slides 2 m
3. A box of mass M = 10 kg rests on a 35° inclined plane with the horizontal. A string is used to keep the box in equilibrium. The coefficient of friction between the box and the inclined plane is 0.3.



* 1. Draw a Free Body Diagram including all forces acting on the particle with their labels.
  2. Find the magnitude of the tension in the string.
  3. Find the magnitude of the force of friction acting on the particle.