More Inclined Planes   Name_____

Honors Physics

For each scenario…Draw in all forces and label them. Show all equations and work required.

1. A 2 kg box is put on the surface of an inclined plane at 27° with the horizontal. The surface of the inclined plane is assumed to be frictionless.
    a) Draw a diagram of the box on the inclined plane and label all forces acting on the box.
    b) Determine the acceleration of the box down the plane.

2. A particle of mass 5 kg rests on a 30° inclined plane with the horizontal. A force F_P of magnitude 30 N acts on the particle in the direction parallel to and up the inclined plane.
    a) Draw a diagram of the particle on the inclined plane and label all forces acting on the particle.
    b) Find the coefficient of friction between the particle and the inclined plane.

3. A boy and his sled have a combined mass of 65 kg. What is their acceleration as they start down an icy 22° incline with a coefficient of friction equal to 0.10? Draw a diagram, label all forces.

4. The boy in the previous problem is pulled back to the top of the hill at a constant speed by a tow rope. What is the magnitude of the force applied to the rope? Draw a diagram label all forces.