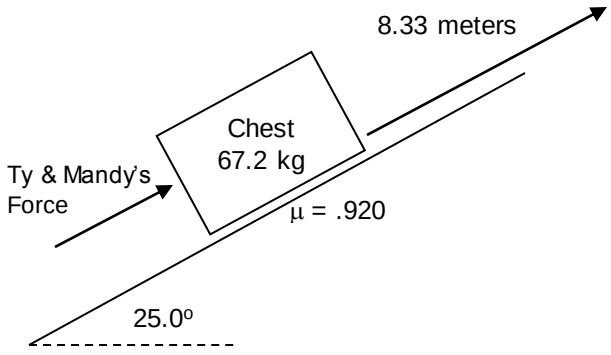
Practice CLEE Problems

Physics

1. Mandy Lifeboats and Ty Dalwaive are walking on a beach when they see a treasure chest. They push the 67.2-kg chest up the beach (which makes an angle of 25.0^o with the horizontal). The coefficient of kinetic friction between the beach sand and the chest is .920. If they push the treasure chest at a constant velocity for 8.33 meters,

   a) What work do Mandy and Ty do on the chest?
   b) Why is it important that they push *parallel* to the surface of the beach (the incline)?



2. Suddenly the chest pops open. Inside is a spring (k= 695 N/cm) that is compressed by 8.60 cm with a 4.70-kg book resting on it. Mandy accidentally triggers the spring's release mechanism.

   a) How high (above the book's original position) will the text go after the spring is released?
   b) What will the book's maximum upward speed be?

3. You are sitting upon a 27^o incline that is 9.472 meters long and you weigh 800 N. Because it is a very slippery surface, the coefficient of kinetic friction is a mere 0.15. There is a flat surface at the bottom of the incline that also has a coefficient of kinetic friction of 0.15. Your friend is pushing you with a constant 100 N force that is parallel to both surfaces the entire way. How far do you travel along the flat surface?