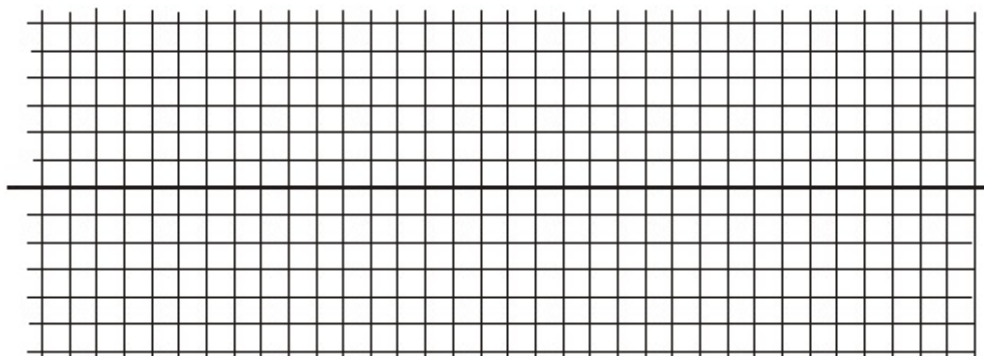


Work and Energy

Name: _____

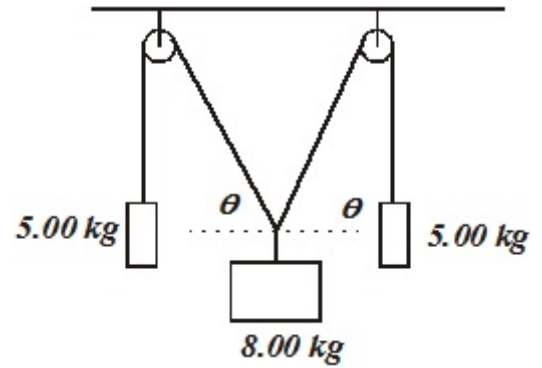
1. A 0.44 kg ball is thrown straight down from a bridge with an initial velocity of 12.5 m/s. It travels for 1.5 seconds. Find: (a) The height of the bridge, (b) the potential energy of the ball before it is thrown, and (c) the total energy of the ball 2.50 m above the water below.

2. You travel down the highway, starting from rest. You travel for 0.30 hours at a speed of 70 mi/h. Then you stop and eat your lunch for 30.0 min. Then you travel for 0.25 hours at 70 mi/h. Then you are forced to wait for 15 minutes for roadwork. Then you travel for 15 minutes at only 35 mi/h. Make a velocity vs time graph of this motion.

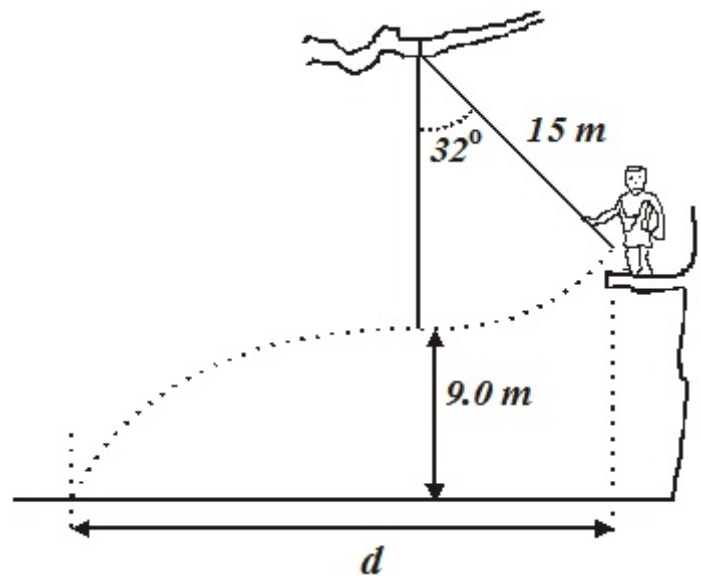


3. A 2.5 kg box slides across the flat surface of a table. The coefficient of kinetic friction for the table/box is 0.295. The box is attached to a light string that passes over a low friction pulley and is connected to a 3.0 kg mass that is hanging vertically. (a) find the acceleration of the system (b) find the velocity of the 2.5 kg box after it has been dragged 0.25 m if its initial velocity was 0.25 m/s, and (c) find the kinetic energy of the box at this point.

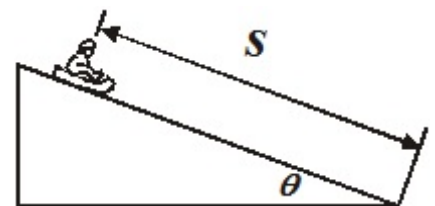
4. Find the two angles if the system is at rest.



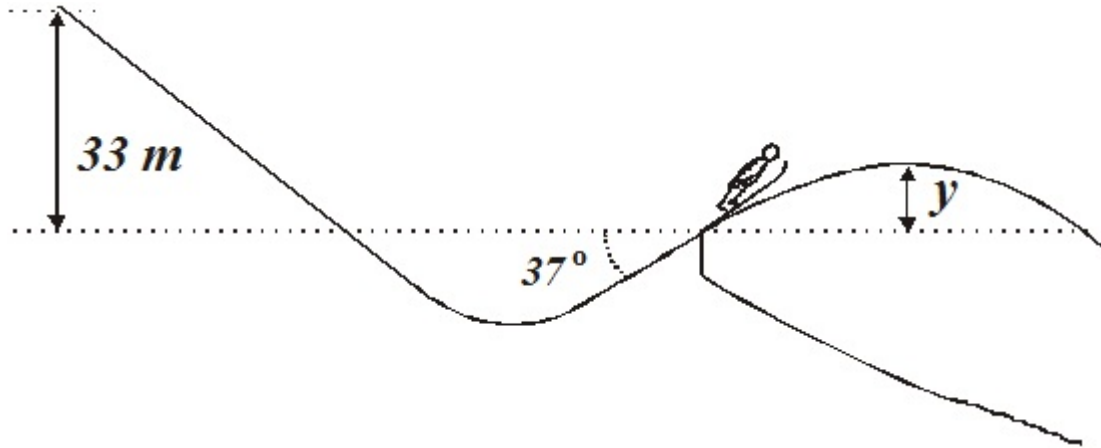
5. Okay, here's a wonderful Tarzan swing problem. Tarzan is above the floor of the jungle on a limb. He swings out on a vine and lets go of the thing when he is at the lowest point of the swing. At this point, he is 9.0 m above the ground. How far horizontally did he travel from when he first started his swing?



6. A sled coasts down a hill as shown. The angle the slope makes with the horizontal is 41° . The distance s is 35 m. Find the speed of the sled at the bottom of the hill.



7. A ski jumper sails down a slope as shown. Find the vertical distance that the skier travels from the edge of the bottom of the ski jump.



8. You pull a box across the floor with a force of 425 N . The coefficient of kinetic friction is 0.305 . The mass of the crate is 125 kg . Angle $\theta = 35.0^\circ$. Find: (a) the acceleration of the box and (b) the amount of work done in moving the crate a distance of 3.50 m .

