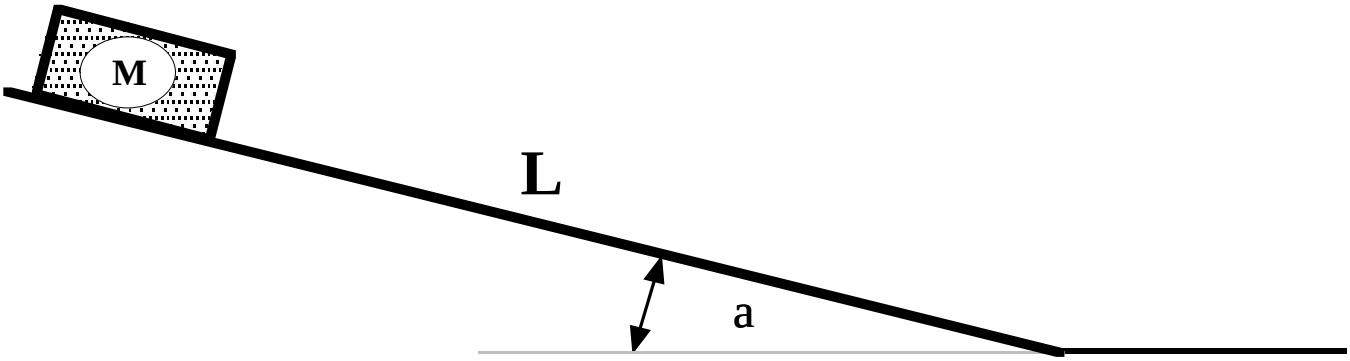
PHYSICS HOMEWORK QUIZ #10 D ENERGY CONSERVATION

A crate, which has a mass of M= 45 kg., is sitting at the top of an inclined plane which is L = 3.8 meters long and which meets the horizontal at an angle of a = 18°. The crate is crate is released and is allowed to slide down the incline. Assume, initially, that the incline is frictionless.



1. What is the gravitational potential energy of the crate while sitting at the top of the incline? [3 pts]

2. What will be the total energy of the crate when it reaches the bottom of the incline? [3 pts]

3. What will be the velocity of the crate when it reaches the bottom of the incline? [3 pts]

For the balance of the problem assume that the coefficient of friction between the crate and incline is μ = 0.28.

4. How much work will be done against friction as the mass slides to the bottom of the incline? [3 pts]

5. What will be the velocity of the crate as it reaches the bottom of the incline ? [3 pts]