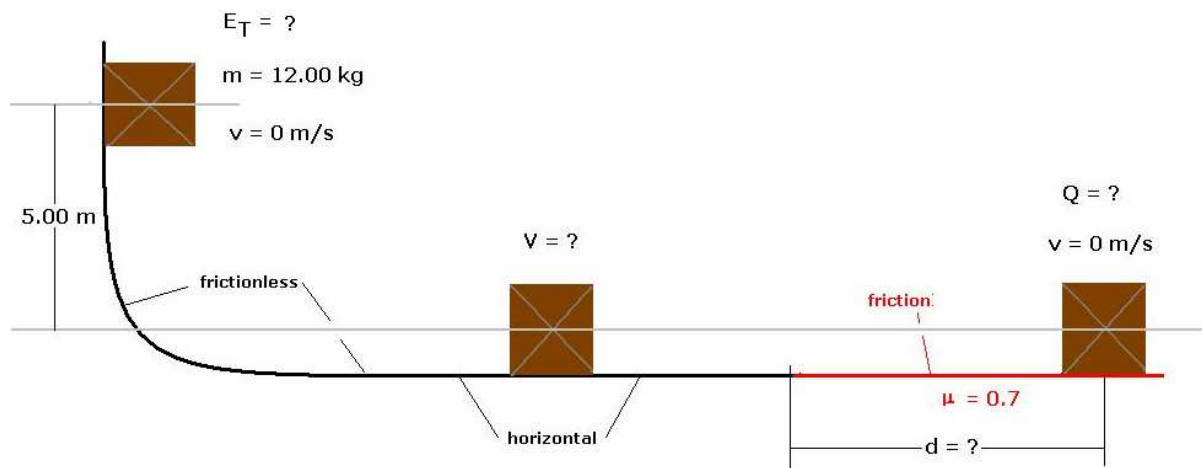


Problems Concerning Work and Energy

Solve the following problem in the space provided. Remember to employ proper problem-solving practices. Show all work including equations, substitutions with units, and dimensional analysis [where necessary].

A 12.00-kg crate descends 5.00 m down a curved frictionless surface and then travels along a horizontal frictionless until it enters an adjacent horizontal surface which possesses a coefficient of friction of 0.7. [See diagram below]. The crate, upon entering the friction surface, decelerates and eventually comes to rest a distance d from the point at which it entered the friction surface. Based upon your understanding of the *Law of Conservation* and the *Work-Energy Principle*, calculate the following:



- The total energy of the system at the top of the surface.
- The speed of the crate just before it enters the friction surface.

- c. The work done on the crate by the frictional force.

- d. The force of friction opposing the crate.

- e. The total distance the crate travels across the friction surface before coming to rest