*Checkout Questions*
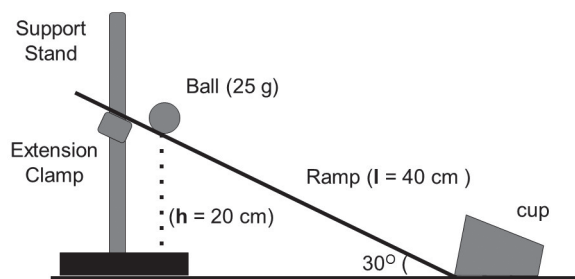
# Lab 20. Kinetic and Potential Energy: How Can We Use the Work-Energy Theorem to Explain and Predict Behavior of a System That Consists of a Ball, a Ramp, and a Cup?

Use the figure below to answer questions 1 and 2. For the acceleration due to gravity, use the positive value for **g** (9.8 m/sec$^2$).



1. What is the potential energy of the ball at the moment it is released on the incline?

   How do you know?

2. What is the kinetic energy of the ball at the moment it strikes the cup?

   How do you know?

3. Galileo hypothesized that free objects accelerate uniformly, or stated another way, that a falling object's velocity increases an equal amount in each equal time interval. Explain how the results of this ball and cup experiment could be used in support of this claim.

4. There is a difference between a law and a theory in science.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about kinetic and potential energy.

5. Scientific knowledge, once proven to be true, does not change.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about kinetic and potential energy.

6. Scientists often need to identify a system and then create a model of it as part of an investigation.  Explain why it useful to create models of systems, using an example from your investigation about kinetic and potential energy and an example from previous investigations in this class or your previous science classes.

## Kinetic and Potential Energy
*How Can We Use the Work-Energy Theorem to Explain and Predict Behavior of a System
That Consists of a Ball, a Ramp, and a Cup?*

7. One of the important aims in science is to track how energy and matter move within a system and to determine if the energy and matter within the system are conserved. Explain why it is useful to track how energy and matter move within a system, using an example from your investigation about kinetic and potential energy and an example from previous investigations in this class or your previous science classes.