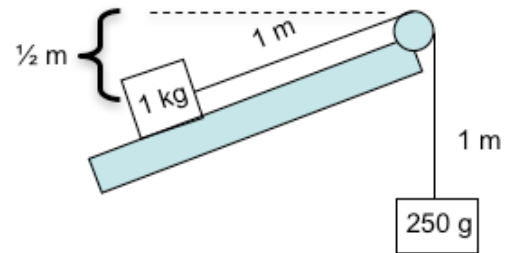


Problem Set #6 due beginning of class, Thursday, Nov. 3. Remember to start each question with a description of what concept is central to your strategy and *why*.

1. Please do Examples 1-4 in 6.0 Systems
2. Please do Examples 1-3 in 6.1 Rotational Systems
3. Please do Example 1 in 6.2 Center of Mass
4. Please do Example 1 in 6.3 Parallel Axis Theorem
5. Consider the system at right where the 1 kg box is on a very slippery table inclined such that if the system moves one meter, the box changes elevation by half a meter.
  - a) How does this change the energy balance equation you set up for problems in 6.0?
  - b) Can you tell me which way the system will acceleration (if at all)? How can you be sure?



6. A disk of uniform mass, total mass  $m_0$ , and radius,  $R$  is secured to a wall with a frictionless pivot that allows rotation as shown at right. It is started in the higher position where the center of the circle is at the same height as the pivot and allowed to drop and swing. We want to find the force on the pin when the disk is swinging at the bottom. In order to solve this complicated, multidimensional problem, please consider:
  - a) What is the complete energy transition happening as the disk rotates from top to bottom?
  - b) What is the complete dynamics going on when the disk is at the bottom of the swing? Is the force on the pivot just equal to  $mg$ ?
  - c) Find the force on the pivot when the disk is in full swing at the bottom. Include direction.

