

1 Class Handout - Energy

1. A 3kg mass starts to slide down a one meter long inclined plane that is at an angle of 30° with respect to the horizontal. What is its speed when it gets to the bottom? Assume $\mu_k = .3$ and $\mu_s = .5$, which is small enough so that it will start to slide. (**You** know two ways to do this! Do it both ways to check your answer)

2 Lab - Energy

1. Drop a bouncy ball from a height of 2 meters.
 - When at a height of 2 meters: What is its PE? What is its KE energy? What is its speed? What is the sum of its PE and KE (total mechanical energy)?

- When at a height of 1 meters: What is its PE? What is its KE energy? What is its speed? What is the sum of its PE and KE (total mechanical energy)?

- Just before it hits the floor at height of 0 meters: What is its PE? What is its KE energy? What is its speed? What is the sum of its PE and KE (total mechanical energy)?

2. Again, drop the ball from 2 meters. After hitting the ground, how high up does it bounce?

- How much mechanical energy is lost? Into what? When?

- What is the speed of the ball just before it hits the ground?

- What is the speed of the ball just after it starts to rise?

- Note: Mechanical Energy is conserved during the fall and separately during the rise, but not during the collision with the floor.

3. Assume your mass is 80kg . Walk up a flight of stairs and calculate how much work you did *against gravity* to climb the flight of stairs. You'll want a meter stick and some string to measure distances.