

The Work of Friction

Friction and Energy

- Frictional forces are always in the opposite direction of motion
- Therefore, a frictional force does negative work
- Negative work means energy is being “lost”
 - Frictional forces usually transform kinetic energy into heat

Example 1

- A 10 kg block slides a distance of 20 m across the floor before coming to a stop. The force of friction acting on the block is 50 N. Calculate
 - The work done by friction on the block.
 - The energy lost due to friction.
 - The initial kinetic energy of the block.
 - The initial velocity of the block.

Example 2

- A 2.0 kg block slides a distance of 1.0 m down a 0.5 m high ramp. The block's velocity at the top of the ramp is 3.0 m/s. The force of friction acting on the block is 15 N. Calculate the speed of the block at the bottom of the ramp.