1. You are applying your physics skills by doing a little carpentry. Through your effort and gravity, a total downward force of 50. N is applied to a 0.60 kg hammer through a distance of 1.5 m.
   1. How much work is done on the hammer?
   2. If the hammer starts from rest, how much kinetic energy does it have at the end of the swing?
   3. What is the speed of the hammer at the end of the swing?
   4. The hammer comes to rest after impacting a nail which moves 6.0 mm into the wood. How much work does the nail do on the hammer?
   5. What is the force the nail pushes against the hammer with to stop it?
2. A man is pulling his son across the snow with a constant force of 40. N at an angle of 35° from the horizontal.
   1. If his son and the sled have a combined mass of 40. kg, how far does the man have to pull to speed the sled up from 0 to 2.0 ?
   2. He lets go and the child coasts to a stop. If the friction force is 5.0 N, how far does the sled coast?
3. A 70 kg car in a crash test is initially moving at 10. . It is crashed into a solid wall and the car's "crumple zone" crumples up a distance of 1.5 meters during impact. Calculate the impact force on the car. Show all proper equations, substituting and canceling of units.
4. A 65 kg firefighter climbs a flight of stairs 10. meters high.
   1. How much work is required?
   2. If the firefighter is forced to jump from this level into a safety net below, what will be his/her speed just before impact?