


Physics 20

Chapter 6 Worksheet

- 1) A 14.8 kg box is being dragged 12.5 m across the floor using a rope held at a 32.0° angle from the floor. The force being used is 146 N. **Determine** the work that has been done. ($1.55e3 J$)
- 2) **Describe** a situation in which you cause an object to move and yet no work was done. (*Carry a book across the room.*)
- 3) A piece of wood is burning on a fireplace. **Explain** whether or not work is done. (*Chemical energy in the wood is changed into thermal energy, so yes, work is being done.*)
- 4) You press down on the gas on your car and accelerate through the mob of zombies in front of you. As you move 65 m through the swarm to get out of the parkade of the shopping mall you've been hiding in, you estimate that the force of your car increases from 200 N to 780 N. **Determine** how much work your car did to the zombies. ($3.2e4 J$)

- 5) $3.54e2 J$ of work is done to speed up a $1.22e2 kg$ log rolling along the ground. If the log was originally moving at 2.3 m/s, **determine** how fast it ends up going. (3.3 m/s)
- 6) A person is standing at the top of a 58.0 m tall hill. He stumbles and falls. As he rolls down the hill, magically friction has no effect on him! When he is still 25.0 m above the base of the hill **determine** how fast he is moving. ($25.4m/s$)
- 7) A stick of dynamite converts $1.68e5 J$ of chemical energy into kinetic and thermal energy in just $1.2e-2 s$. **Determine** the power of this stick of dynamite. ($1.4e7 W$)
- 8) I need a 1.00 W motor to push a garbage compactor so that it squishes some garbage. The garbage has a spring constant of 49.7 N/m. If I am going to squish it 30 cm, **determine** how much time the compactor takes. ($2.24 s$)
- 9) Later I find out that the motor I am using in the previous question is only 35% efficient. **Determine** the actual output of the motor, and **explain** what this efficiency means. ($0.35 W$)