Answers!! Work Section Review 5-1 pg. 171

1) For each of the following situations, identify whether the everyday or scientific meaning of work is intended
a) Jack had to work against time as the deadline neared. ***everyday***
b) Jill had to work on her homework before she went to bed. ***everyday***
c) Jack did work carrying water up the hill. ***scientific***

2) If a neighbor pushes a lawnmower four times as far as you, but exerts only half the force, which one of you does more work? By how much?
½ F*4D = neighbor work = 2 FD, so neighbor does twice as much work
3) For each of the following cases indicate whether the work done on a second object in each example will have a positive or negative value.
a) The road exerts a friction force on a speeding car skidding to a stop. **neg**
b) A rope exerts a force on a bucket as the bucket is raised up a well ***pos***
c) Air exerts a force on a parachute as the parachutist slowly falls to Earth. ***neg***
d) The Earth exerts a force on a bobsled as it moves down a track. **pos**

4) Determine whether work is being done in each of the following examples.
a) A train engine pulling a loaded boxcar initially at rest. ***yes***
b) A tug of war that is evenly matched. ***no***
c) A crane lifting a car. ***yes***

5) A worker pushed a 1500 N crate with a horizontal force of 345 N a distance of 24 m. Assume the coefficient of kinetic friction between the crate and the floor is 0.22
a) How much work is done by the worker on the crate? ***W=FD=345*24=8280 J***
b) How much work is done by the floor on the crate?
W=Ff * D=.22(1500)*24=330*24=- 7920 J
c) What is the net work done on the crate? ***8280-7920=360 Joules***

6) A .075 kg ball in a kinetic sculpture is raised 1.33 m off the ground by a motorized vertical conveyor belt. A constant frictional force of .35 N acts in the direction opposite the conveyor belt's motion. How much total work is done in raising the ball??
Work done by gravity = mgh= .075 (9.8) 1.33 = .735 N * 1.33 m = -.9775 J
Work done by friction = .35 N * 1.33m = -.4655 J

Total Work done = .9775 J + .4655 J = 1.44305 J =
Or Fnet* Dist = (Weight+Fric)*Dis=1.085 J*1.33 m=1.44305 Joules