Planet Holloway **websheet 5.1**
*AP Physics C* - Chapter 5
You may print this out and write on it or work on your own paper.
**Show all work.**


1.  A horizontal force of 120 N is applied to a 22 kg monkey across an 8 m level surface. If the monkey accelerates at 3.5 m/s/s, then what is the work done by the force of friction as it acts to retard the motion of the monkey?

2.  Physics Phil pushes a 65 N crate of watermelon up a ramp 16 m in length and inclined at 15 degrees.  What is the change of potential energy in the crate as it moves from the bottom of the ramp to the top?

3.  A simple pendulum constructed in the front of a physics classroom is 3 m long and has a bowling ball as a bob with a mass of 12 kg.  If the support string is initially 25 degrees from vertical and released with an initial speed of 2 m/s, what is the maximum angle it will swing to on the other side?

4.  Captain Hooke has a Hooke's law spring hanging from his hook.  If the spring is stretched 17 cm and has 84 J stored in it at this point, what is the spring constant for Hooke's Hooke's law spring upon his hook?  (I know you're as hooked on physics as I am).

5.  Tico pushes a wheelbarrow filled with peat, weighing 280 N, to the top of 40 m long street inclined at 15 degrees.  Unfortunately, after leaving the wheelbarrow at the top of the hill, a strong breeze causes the wheelbarrow to slide back down the hill, during which a 57 N friction force acts on it.  What is the kinetic energy of the wheelbarrow at the bottom of the hill?

6.  A skydiver (55 kg) with a broken foot jumps out of an airplane at a height of 850 m above the ground.  If he lands with a speed of 3.5 m/s, what is the energy that friction removed?


Answers:

1.  – 344 J

2.  269.2 J

3.  32.9 degrees

4.  5813.1 N/m

5.  618.8 J

6.  $4.67 \times 10^5$ J