**Integrated Science** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Work, power & energy practice problems.

Answer each of the following – SHOW your work because we are not allowed to open your skull to observe your thinking…

1. A science student, weighing 130 pounds, runs up the steps from the track to the top of the stadium.
   1. Convert his mass to **kilograms (kg)** (1 kg = 2.2 pounds)
   2. If the vertical distance from the track to the stadium deck is **8 meters**, determine how much gravitational PE the student gained. Remember that as he climbs the stairs he is working against **gravity**…
2. One **horsepower** (1 hp) is the unit of power based upon the work that a horse can do in one second. In the metric system, 1 horsepower equals 745.7 Watts. Suppose you have a horse that has a power output of 750 Watts. How much work does this horse do in **.55 seconds?**
3. You must exert a force of **4.5 Newtons** on a book to slide it **.6 meters** across a table. How much work do you do on the book?
4. The smallest bird is a Cuban bee hummingbird, which has a mass of only **1.7 g.** If this bird did **.00088 Joules** of work by exerting an upward force of **.00034 Newtons**, how far did it fly?