Exercise 5. Work and Energy

Torsional Spring ID# _____ By: _____(initials)

Fence I.D.#: _____ m_0: _____ Hanging mass: _____

s_0 _____ s_1 _____ Δs _____ ± _____

Table 5.1

Point	Time	x	z(x)
0			
1			
2			
3			
4			
5			
6			
7			

a = _____

v_0 = _____

From the time the glider is released until it reaches the photogate, show **explicit** calculations (i.e. the equations that you use and what goes in them) for

(a) The work done by the net force W_{Net}

(b) The change in kinetic energy of glider + hanging mass $\Delta(KE)$

(c) The work done by the torsional spring force W_F

(d) The work done by gravity W_g

(e) Assume that potential energy (gravitational and spring) of the system is zero as soon as the glider is released (point A). Calculate the mechanical energy ME_A.

(f) Calculate the mechanical energy, ME_B, at the point when the leading edge of the photogate interrupts the beam (point B). Note that there are two potential energy changes, one for the spring and one for gravity that you must calculate first.

$\Delta(PE)_{Spring}$ =

$\Delta(PE)_{Gravity}$ =

ME_B =

Table 5.2 Summary of Results

	0 grams	10 grams	20 grams	30 grams
(a) W_{Net}				
(b) $\Delta(KE)$				
(c) W_F				
(d) W_g				
(e) ME_A				
(f) ME_B				