Honors Physics 5.1 & 5.2

Equation Search & Calculations

Directions: Search the chapter for the equations and fill in the missing areas. Circle the correct term in the parentheses. Fill in the triangles with the correct equations.

**Work**

Work = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Symbols:

Units:

Work = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Symbols:

Units:

Work net = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(final) (+ or − ) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(initial)

 Symbols:

Units:



**Kinetic Energy**

 KE = (1/2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× / ÷ ) (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)2

 Symbols:

Units:

**Work-Kinetic Energy Theorem**

Show your work here for the derivation of the work-kinetic energy theorem starting with the normal work equation and showing the final product.

**Gravitational Potential Energy**



PEg = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷ ) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷ ) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Symbols:

Units:

**Elastic Potential Energy**

PEelastic = (1/2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (× or ÷ ) (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)2

Symbols:

Units:

Calculation Problems

1. A tugboat pulls a ship with a constant net horizontal force of 5.00E3 N and causes the ship to move through a harbor. How much work is done on a ship if it moves a distance of 3.0km.
2. A weight lifter lifts a set of weights a vertical distance of 2.00m. If a constant net force of 350N is exerted on the weights, what is the net work done on the weights?
3. Calculate the change in speed of an 8.0E4 kg airliner with a kinetic energy of 1.1E9 J.
4. Two bullets have masses of 3.0g and 6.0g, respectively. Both are fired with a speed of 40.0 m/s. Which bullet has more kinetic energy? What is the ratio of their kinetic energies?
5. A spring with a force constant of 5.2 N/m has a relaxed length of 2.45m. When a mass is attached to the end of the spring and allowed to come to rest, the vertical length of the spring is 3.57m. Calculate the elastic potential energy stored in the spring.