Handed Out: _____ Name: _____
Due: _____ Date: _____

Study Guide – Work and Energy Quiz

Physical Science and Technology

Complete this If You Know table in order to solve the problems on the next pages:

If you know …	*And you need …*	*Use this equation:*
Work, Force	Distance	
Work, Power	Time	
Mass, Acceleration	Force	
Work, Distance	Force	
Height, Mass	Gravitational Potential Energy (G.P.E.)	
Mass, G.P.E.	Height	
Mass	Weight	
Mass, Velocity	Kinetic Energy (K.E.)	
Mass, Kinetic Energy (K.E.)	Velocity	
Velocity, K.E.	Mass	

1. A system of gears can move a speed racer a distance of 4 m while exerting a force of 0.33 N. How much work can this system of gears do? Use the Five Steps.

2. If a mutant chicken with a weight of 2.4 Newtons is sitting 11.3 meters above the ground, how much gravitational potential energy does it have? Show the Five Steps.

3. The Hunchback of Notre Dame is using a drill that has does a total of 1,493.22 Joules of work. If it was exerting 24.2 N of force, what distance did the drill bit turn? Use the Five Steps.

4. Mr. Bregar is floating along in the ocean. As he floats, he is pushing Riley The Dog with a force of 86.5 Newtons. If he pushes Riley The Dog for 44.9 m, how much work does he do? Use the Five Steps.

5. A fishstick pushes on a door for 19 hours. The fishstick is pushing with a force of 44 Newtons. The door does not move at all. How much work was done to the door? Use the Five Steps.

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6. John Bonham, the drummer for Led Zeppelin, took his bike and jumped off of a cliff. The force due to gravity on him and his bike was 43.5N and he fell 4.2 meters. How much gravitational potential energy will he and his bike have? Show the Five Steps.

7. A chicken is sitting still on a runway. A frozen cod pushes on the chicken. It takes it 5.7 seconds to accelerate the chicken until it is moving at a velocity of 11.9 m/s. The chicken has a mass of 4.1 kg. The chicken moves a total distance of 6.8 meters.
   a. How quickly did the frozen cod accelerate the chicken? Use the Five Steps. Remember : $a = (v_f - v_i) / t$

   b. How much unbalanced force affected the chicken? Use the Five Steps.

   c. How much work did the frozen cod do to the chicken? Use the Five Steps.

   d. How much power did the frozen cod exert? Use the Five Steps.

8. A free jumper leaps off of a bridge above a river. The jumper's mass is 84.2 kg. Just before she hits the water, she has a velocity of 13.2 m/s.
   a. How much kinetic energy does the jumper have just before she hits the water? Use the Five Steps.

   b. How much gravitational potential energy did the jumper have right before she jumped? You do not need to use the Five Steps.

   c. How high above the ground was the bridge? Use the Five Steps.