Name _____ Date _____ Period _____

Worksheet: Energy Problems

PHYSICS-CHAPTER 9: ENERGY

Directions: *Answer the following questions based on reading from Chapter 9 (pgs. 144-169) and/or from notes in class. I have included the equations you will need to solve the following problems below. Show all work! This includes a sketch of each scenario!*

$$W = Fd \qquad P = \frac{W}{t} \qquad KE = \frac{1}{2}mv^2 \qquad PE = mgh$$

1. A student lifts a box of books that weighs ***200 N***. The box is lifted ***2.5 m***. How much **work** does the student do on the box?

2. A student lifts a box of books that weighs ***350 N***. The box is lifted ***4.0 m***. How much **work** does the student do on the box?

3. A box that weighs ***375 N*** is lifted a distance of ***35.0 m*** straight up by a cable attached to a motor. The job is done in ***5.0 seconds***. What **power** is developed by the motor in **watts**?

4. A box that weighs ***150 N*** is lifted a distance of ***20.0 m*** straight up by a cable attached to a motor. The job is done in ***10.0 seconds***. What **power** is developed by the motor in **watts**?

5. Mr. Wilson does ***195 J*** of work lifting himself ***0.5 m***. What is Mr. Wilson's **mass**?

6. Mr. Wilson does ***350 J*** of work lifting himself ***2.0 m***. What is Mr. Wilson's **mass**?

7. A hydraulic lift used at an automotive repair shop raises a **750-kilogram** car **one meter** off of the ground. What is the potential energy given to the car?

8. A hydraulic lift used at an automotive repair shop raises a **1500-kilogram** car **three meters** off of the ground. What is the potential energy given to the car?

9. How many joules of work are done on box when a force of **50 N** pushes it **3.0 m**?

10. How many joules of work are done on box when a force of **150 N** pushes it **2.0 m**?

11. A **2.0-kilogram** mass is moving with a speed of **3.0 m/s**. What is the kinetic energy of the mass?

12. A **6.0-kilogram** mass is moving with a speed of **2.0 m/s**. What is the kinetic energy of the mass?

13. A **20 kilogram** rock is dropped off the top of a **30 meter** tall building. What is the kinetic energy of the rock right before it impacts the ground?

14. A **8 kilogram** rock is dropped off the top of a **25 meter** tall building. What is the kinetic energy of the rock right before it impacts the ground?