

Name _____ Date _____ Period _____

Unit 4 Test Review

CONCEPTUAL PHYSICS: ENERGY

Directions: Answer the following questions using your notes and textbook

1. What is the equation for **work**?
2. What is the equation for **gravitational potential energy**?
3. What is the equation for **kinetic energy**?
4. What is the equation for **power**?
5. What are the **units** for the following:
 - a. Work-
 - b. Gravitational potential energy-
 - c. Kinetic energy-
 - d. Power-
 - e. Distance-
 - f. Velocity-
 - g. Force-
6. What are two ways to increase the **gravitational potential energy** of an object?
7. Which would increase the **kinetic** energy of an object more? Doubling the **mass** of the object, or doubling the **velocity** of the object? Explain
8. What are two ways to increase the **power** developed? Explain

9. Describe what happens to the **potential** energy and **kinetic** energy of an object that is falling?

10. What would happen to an objects **kinetic energy** if it's speed:

- a. Doubled (2x)-
- b. Tripled (3x)-
- c. Quadrupled (4x)-

11. What would happen to the **kinetic energy** of an object if it's mass:

- a. Doubled (2x)-
- b. Tripled (3x)-
- c. Quadrupled (4x)-

12. What is meant by the statement that **energy is a conserved quantity**?

13. How would you define "**energy**"?

14. Tell me what happens to the following quantities as an object **falls**: (increase, decrease, or stays the same)

- a. velocity-
- b. acceleration-
- c. momentum-
- d. potential energy-
- e. kinetic energy-

15. A heavy object and a light object are released from rest at the same height and time in a vacuum. As they fall, they have **equal** (circle all that apply)

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|----------|--------------|----------|------------------|
| velocity | acceleration | momentum | potential energy |
| weight | total energy | mass | kinetic energy |

16. A student lifts a box of books that weighs **100 N**. The box is lifted **1.5 m**. How much **work** does the student do on the box?

17. A box that weighs **225 N** is lifted a distance of **10.0 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**?

18. A hydraulic lift used at an automotive repair shop raises a **1000-kilogram** car **two meters** off of the ground. What is the potential energy given to the car?

19. How many joules of work are done on box when a force of **75 N** pushes it **10.0 m**?

20. A **4.0-kilogram** mass is moving with a speed of **4.0 m/s**. What is the kinetic energy of the mass?

21. A **10 kilogram** rock is dropped off the top of a **50 meter** tall building. What is the kinetic energy of the rock right before it impacts the ground?