

U.07c - Kinetic & Potential Energy Review



WORKSHEET 7C: Review for Exam

NAME: _____ DATE: _____

SHOW ALL CALCULATIONS! Solve the following problems, being sure to resolve units to the simplest unit equivalent:

$$\mathbf{KE = \frac{1}{2} mv^2}$$

$$\mathbf{PE = \text{weight times height} = mgh}$$

$$\mathbf{\text{Weight} = \text{mass} \times \text{gravitational acceleration} = (\text{kg})(9.8\text{m/s}^2)}$$

$$\mathbf{\text{Force} = \text{Newtons} = \text{N} = (\text{kg})(\text{m/s}^2)}$$

$$\mathbf{\text{Energy} = \text{Joules} = \text{Nm}}$$

$$\mathbf{\text{Work} = \text{Force} \times \text{Distance} = \text{Nm} = \text{Joules}}$$

$$\mathbf{\text{Velocity} = \text{m/s}}$$

$$\mathbf{\text{Gravitational acceleration} = g = 9.8 \text{ m/s}^2}$$

1. How many Joules of kinetic energy are represented by a basketball weighing 1.8 kilograms and moving at 17 meters per second?

2. A can of paint weighing 5 kilograms and sitting at the top of a 3 meter tall ladder represents how much gravitational potential energy?

3. What is the velocity of a 2,000 kilogram vehicle with 40,000 Joules of kinetic energy?

4. How many Newtons of force must be applied to get a 1,000 kilogram vehicle to accelerate at a rate of 15 meters per second per second?

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5. If I have to apply 32 Newtons of lifting force to lift a book 1.2 meters above the floor, how many Joules of work have I just done?

6. What is the velocity of a 500 kilogram cart with 2200 Joules of kinetic energy?

*After you complete these questions, check your answers against someone else in the room and resolve any differences between your two sheets. Then turn in your work and spend the remainder of the bell solving puzzles using the "Keep Talking" app. The EDP report for your trebuchet is due tomorrow.