

Potential And Kinetic Energy Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the formula for calculating potential energy?

undefined. $PE = \text{mass} \times \text{velocity}$

undefined. **$PE = \text{mass} \times \text{gravity} \times \text{height}$ ✓**

undefined. $PE = 0.5 \times \text{mass} \times \text{velocity}^2$

undefined. $PE = \text{mass} \times \text{acceleration}$

The correct formula for calculating potential energy involves mass, gravity, and height.

Which of the following are examples of potential energy? (Select all that apply)

undefined. **A car parked on a hill ✓**

undefined. A rolling ball

undefined. **Water stored in a dam ✓**

undefined. A flying airplane

Examples of potential energy include objects that are elevated or stored.

Explain in your own words what kinetic energy is and provide an example from everyday life.

Kinetic energy is the energy of motion, and an example is a car driving down the road.

List two factors that affect the amount of kinetic energy an object has.

1. Factor 1

Mass

2. Factor 2

Velocity

The two factors are mass and velocity.

Part 2: Comprehension and Application

Which statement best describes the Law of Conservation of Energy?

undefined. Energy can be created but not destroyed.

undefined. Energy can be destroyed but not created.

undefined. **Energy can be transformed from one form to another, but the total amount remains constant.** ✓

undefined. Energy is always lost in transformations.

The law states that energy can be transformed but not created or destroyed.

How does height affect potential energy? (Select all that apply)

undefined. **Higher height increases potential energy.** ✓

undefined. **Lower height decreases potential energy.** ✓

undefined. Height has no effect on potential energy.

undefined. Potential energy is inversely proportional to height.

Height directly affects potential energy; higher objects have more potential energy.

Describe how energy transformation occurs in a swinging pendulum.

In a swinging pendulum, potential energy is converted to kinetic energy and vice versa.

If a 2 kg object is held at a height of 5 meters, what is its potential energy? (Assume $g = 9.8 \text{ m/s}^2$)

undefined. **49 J** ✓

undefined. 98 J

undefined. 19.6 J

undefined. 10 J

The potential energy can be calculated using the formula $PE = \text{mass} \times \text{gravity} \times \text{height}$.

A roller coaster at the top of a hill has 5000 J of potential energy. As it descends, which of the following statements are true? (Select all that apply)

undefined. Its potential energy decreases. ✓

undefined. Its kinetic energy increases. ✓

undefined. Its total energy increases.

undefined. Its total energy remains constant. ✓

As the roller coaster descends, its potential energy decreases while its kinetic energy increases.

Calculate the kinetic energy of a 3 kg ball moving at a velocity of 4 m/s.

The kinetic energy can be calculated using the formula, resulting in 24 J.

Part 3: Analysis, Evaluation, and Creation

Which scenario best illustrates the conversion of potential energy to kinetic energy?

undefined. A book resting on a table.

undefined. A car accelerating on a flat road.

undefined. A diver jumping off a diving board. ✓

undefined. A light bulb being turned on.

The scenario of a diver jumping off a diving board illustrates the conversion of potential energy to kinetic energy.

Analyze the following situations and identify which involve energy transformation. (Select all that apply)

undefined. A stretched bow releasing an arrow. ✓

undefined. A person sitting still.

undefined. A wind turbine generating electricity. ✓

undefined. A car parked in a garage.

The situations involving energy transformation include a stretched bow releasing an arrow and a wind turbine generating electricity.

Compare and contrast potential and kinetic energy in terms of their dependence on mass and velocity.

Potential energy depends on mass and height, while kinetic energy depends on mass and velocity.

Which of the following best evaluates the efficiency of energy transformation in a system?

undefined. The amount of energy lost as heat. ✓

undefined. The speed of energy transformation.

undefined. The increase in potential energy.

undefined. The total energy input.

The efficiency of energy transformation is best evaluated by the amount of energy lost as heat.

Evaluate the following statements about energy conservation in real-world applications. (Select all that apply)

undefined. Energy-efficient appliances reduce energy waste. ✓

undefined. Energy can be completely converted to work without any loss.

undefined. Renewable energy sources help conserve energy. ✓

undefined. All energy transformations are 100% efficient.

Energy-efficient appliances reduce energy waste, and renewable energy sources help conserve energy.

Design a simple experiment to demonstrate the conversion of potential energy to kinetic energy using household items. Describe the setup and expected observations.

An example experiment could involve dropping a ball from a height to observe the conversion of potential energy to kinetic energy.