

Potential Energy Kinetic Energy Worksheet

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Part 1: Building a Foundation
What is the formula for calculating gravitational potential energy?
Hint: Think about the variables involved in potential energy.
\bigcirc A) PE = mv ²
○ B) PE = mgh
\bigcirc C) PE = 1/2 mv ²
○ D) PE = mg/v
Which of the following factors affect the gravitational potential energy of an object?
Hint: Consider what influences an object's position and mass.
A) Mass
B) Height
C) Velocity
D) Gravitational pull
Explain in your own words what kinetic energy is and how it differs from potential energy.
Hint: Consider the motion of objects and their position.

List the two main types of potential energy and provide a brief description of each.



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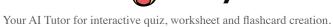
Hint: Think about different forms of stored energy.
1. Gravitational Potential Energy
2. Elastic Potential Energy
Don't O. Understanding and Interpretation
Part 2: Understanding and Interpretation
If an object is lifted to a higher shelf, what happens to its potential energy?
Hint: Consider the relationship between height and energy.
○ A) It decreases.
O B) It remains the same.
C) It increases.
O) It converts to kinetic energy.
Which scenarios demonstrate the conversion of potential energy to kinetic energy?
Hint: Think about objects in motion and their starting positions.
A) A ball rolling down a hill
B) A compressed spring releasing
C) A car parked on a hill
D) A book sitting on a table
Describe a real-world example where kinetic energy is transformed into potential energy.
Hint: Consider scenarios involving movement and height.



Part 3: Application and Analysis

A 2 kg object is dropped from a height of 10 meters. What is its potential energy at the top? (Use g = 9.8 m/s^2)
Hint: Use the formula PE = mgh to calculate.
○ A) 19.6 J ○ B) 98 J
○ C) 196 J
○ D) 20 J
Which of the following changes will increase the kinetic energy of a moving car?
Hint: Consider factors that influence motion.
A) Increasing its mass
☐ B) Increasing its velocity
C) Decreasing its height
D) Decreasing its mass
A roller coaster car at the top of a hill has 5000 J of potential energy. As it descends, what happens to this energy? Explain the energy transformation process. Hint: Think about how energy changes forms during the ride.
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If two objects have the same mass but different velocities, which object has more kinetic energy?
Hint: Consider how velocity affects kinetic energy.
A) The object with the higher velocity
○ B) The object with the lower velocity
C) Both have the same kinetic energy
O) It depends on their potential energy

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Hint: Think about how energy changes form in each scenario.	
A) A pendulum swinging	
☐ B) A book falling off a shelf	
C) A stationary car	
D) A compressed spring held in place	
Analyze how the conservation of energy principle applies to a pendulum in motion. Discuss the energy transformations that occur.	
Hint: Consider the energy changes as the pendulum swings.	
Part 4: Evaluation and Creation	
Which statement best evaluates the relationship between mass and kinetic energy?	
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Design an experiment to demonstrate the conversion of potential energy to kinetic energy using household items. Describe the setup, procedure, and expected outcomes.	
Hint: Think about simple experiments that illustrate energy transformation.	
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