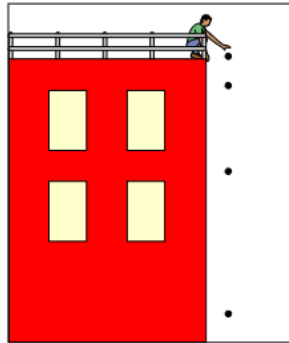


Item	Grade	PE	SEP	DCI	CCC	DOK
26	High School	HS-PS3-1	5. Using Mathematics and Computational Thinking	PS3.A Definitions of Energy	4. Systems and System Models	2

ILCS: Create a correct mathematical representation to determine the components of gravitational potential energy in the Earth-ball system and kinetic energy.

A student drops a tennis ball from the top of a building, as shown in the picture. Air resistance is negligible.



Explain how the student can determine the height of the building if the kinetic energy of the tennis ball is known when it hits the ground. In your explanation, use the terms kinetic energy, gravitational potential energy, acceleration due to gravity, mass, and height. Do not use equations. Enter your answer in the box provided.

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ABC English Ω

2 point

Exemplar:

The kinetic energy (KE) of the ball at the bottom of the building is the same as the gravitational potential energy (GPE/PE) at the top of the building. The gravitational potential energy (GPE/PE) needs to be divided by the mass of the tennis ball and the acceleration due to gravity (or gravity) to find the height of the building.

Rubric continues on the next page.

Rubric:

The response says that the kinetic energy of the tennis ball at the bottom of the building is equal to the gravitational potential energy of the tennis ball at the top of the building. AND

The response says that the gravitational potential energy at the top of the building can be divided by the mass and acceleration due to gravity to find the height of the building.

1 point

Exemplar:

The kinetic energy (KE) of the ball at the bottom of the building is the same as the gravitational potential energy (GPE/PE) at the top of the building. OR

The gravitational potential energy (GPE/PE) needs to be divided by the mass of the tennis ball and the acceleration due to gravity (or gravity) to find the height of the building.

Rubric:

The response says that the kinetic energy of the tennis ball at the bottom of the building is equal to the gravitational potential energy of the tennis ball at the top of the building. OR

The response says that the gravitational potential energy at the top of the building can be divided by the mass and acceleration due to gravity to find the height of the building.

0 point

Exemplar:

The kinetic energy (KE) of the tennis ball at the bottom is not the same as the gravitational potential energy (GPE) of the ball at the top of the building. OR

Time how long it takes for the ball to fall to the ground. OR

Measure the height of the building with a meterstick.

Rubric:

A 0-point response attempts to answer the prompt but is incorrect.