

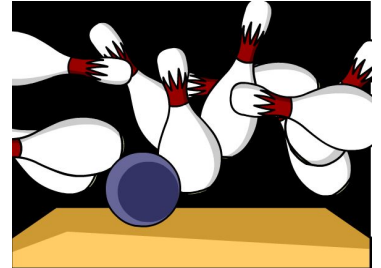
Name \_\_\_\_\_

Date \_\_\_\_\_

### Calculating GPE, EPE and KE

Objectives: You will be able to demonstrate an understanding of Kinetic and Potential Energy by...

- Categorizing situations in which GPE and KE are high and low
- Calculating GPE, KE, EPE and other variables associated with those types of energy



Do Now: Which of the following balls has more energy? Explain how you know.

<p><b>A</b></p> <p>4 kg</p> <p>2 v →</p>	<p><b>B</b></p> <p>2 kg</p> <p>↑ 4 v</p>	<p><b>C</b></p> <p>2 kg</p> <p>↓ 4 v</p>
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Brief note: When we calculate Energy, we are talking about ONE \_\_\_\_\_. We don't care about what happened \_\_\_\_\_ or \_\_\_\_\_. We just ask ourselves about the object's \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

#### Activity 2: Use your notes from yesterday on calculating KE, GPE and EPE to solve the following problems:

1. Some students egg their least favorite teacher's house on Halloween. What is the potential energy stored in an egg if it has a mass of 0.06 kg and it is dropped from a height of 3 m?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

2. When the egg hits the ground, it has a speed of 7.7 m/s and the same mass of 0.06 kg. What is the kinetic energy of the egg when it hits the ground?

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<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

3. For her first flying lesson, a witch climbs up to a 3m diving platform. She then jumps off the platform, broomstick in hand, giving herself an initial velocity of 4 m/s. The mass of the witch is 60kg. What is the Total Energy of the witch?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

4. Glenn Rhee throws a bowling ball at a group of zombies. The bowling ball has a mass of 4kg and speeds down the lane at 3m/s. What is the KE?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

5. A 12 kg box of apples for a “bobbing for apples” competition tips over and the apples fall to the ground. An apple has a mass of 1kg, and reaches a speed of 6m/s. What is the KE of 1 of the apples?

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<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

6. Buffy the Vampire Slayer shoots a 0.05 kg clove of garlic across the cemetery towards a vampire. She pulls back her 30 N/m slingshot 20 cm, holding it at a height of 1.2 meters. How much energy has she stored in the slingshot before letting go?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

7. A high jumper is 2 m up with 1000 J of potential energy. What is the mass of the high jumper?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

8. A 12 kg box of apples for the bobbing for apples competition is sitting on top of a shelf. The box has 480 J of potential energy. How high up is the box?

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<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

9. Mr. Bones the skeleton is jumping on a trampoline. He compresses the trampoline by 0.8 meters, and in the process stores 3000 J of EPE. What is the spring constant of the trampoline?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>

10. Mr. Bones is bungee-jumping. His bungee cord, which has a spring constant of 50 N/m, has stored 8000 J of EPE. How far is his bungee cord stretched?

<i>Known:</i>	<i>Unknown:</i>	<i>Tools (drawing):</i>
<i>Equation(s):</i>	<i>Solve:</i>	<i>Final answer (with units):</i>