

Entire week of 3.16.20

**Essential Question and Objective:** What is mechanical Energy and how does it play a role in the motion of objects? Students will understand Potential energy, Kinetic energy, and energy of work.

**Concepts:** Energy is measured in units of Joules, Law of conservation of energy.

**Equations:**  $KE = \frac{1}{2} mv^2$  ,  $PE = mgh$  ,  $W = \text{Force} \times (\text{distance})$

1 Joule =  $1 \text{ kg} \times (1 \text{ m/s})^2 = 1 \text{ kg} \times (1 \text{ m/s}^2) \times 1 \text{ meter} = 1 \text{ Newton} \times (1 \text{ meter})$

**Overall equation:**  $ME = KE + PE$

Activity	Link	Student responsibility
Video 1:	<a href="#">Overview of KE and PE</a>	Take notes in your notebook
Video 2:	<a href="#">introduction to kinetic and potential energy with questions</a>	For each of the 4 problems below in black, make a MODEL of the problem and label, then solve using correct units throughout. The video will guide you if you get stuck.
Student Practice	<a href="#">Practice questions with answers</a>	On your OWN paper, make models for each of the problems and solve using units throughout.
Lab (Tuesday)	<a href="https://evansccca.weebly.com/physics20.html">https://evansccca.weebly.com/physics20.html</a> SEE SCHOOLGY FOR HANDOUTS	Energy skate park- This is our Lab for Tuesday. Familiarize yourself with it.
Wed-Fri	Finish The "Potential and Kinetic energy 1" handout (answers provided).	I am figuring out how you can turn all this in. KEEP ahold of it so I can give you full credit!!

Intro to KE and PE with questions for video 2:

1. What is the kinetic energy of a 5kg ball moving at a speed of 12 m/s?

2. What happens to the kinetic energy of an object if (a) the mass is doubled? (b) the speed is doubled?

(c) the speed is tripled? (d) the mass is tripled and the speed is quadrupled?

3. What is the gravitational potential energy of a 2.5kg book that rests 4m above the ground?

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4. A 10kg ball falls from a height of 100m. (a) Calculate the vertical speed of the ball during the first 4 seconds. (b) Calculate the height of the ball above the ground during the first 4 seconds. (c) Calculate the kinetic and potential energies of the ball. (d) Determine the total mechanical energy of the ball? (e) Is gravity a conservative force?

<http://www.mayfieldschools.org/Downloads/Work%20Energy%20Power%20Key%201%2012-13.pdf>