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| M. Angileri | **6th grade science** | | **Lesson Plans 12-10-18 Kinetic Energy #2 Potential Energy #1** | | | | |
| NGSS Standards | **MS-PS3-1**  **MS-PS3-2**  **MS-PS3-5**  **DCI : MS-PS.3A**  **MS-PS3.A.2**  **MS-PS3-5**  S & E practices  CCC | | Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.  Develop a model to describe that the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in a system,  Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.  **Definition of Energy:** Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed.  **Definition of Energy:** A system of objects may also contain stored(potential) energy, depending on their relative positions.  **Conservation of Energy and Energy Transfer:** When the motion energy of an object changes, there is inevitably some other change in energy at the same time.  **Analyzing and interpreting Data:** Construct and interpret graphical displays to identify linear and non-linear relationships.  **Developing and Using Models:** Unobservable Mechanisms: Develop a model to describe unobservable mechanisms.  **Scale, Proportion, and Quantity:** Proportional relationships among different types of quantities provided information about the magnitude of properties and processes.  **Energy and Matter:** Energy may take different forms.  **Systems & Models:** Models can be used to represent systems and their interactions-such as inputs, processes, and outputs- and energy, matter, and information flows within a system. | | | | |
| Essential Question | | When is the most kinetic energy being used when riding a rollercoaster?  How does a pinball machine use energy to move the steel ball? | | | | | |
| Vocabulary: | | **Density: Mass per unit of volume**  **Kinetic Energy: Energy of motion.**  **Law of Conservation of Energy: Energy can not be created or destroyed, energy just changes form.**  **Mass: A measure of how much matter is present in a substance.**  **Motion: The change in an object’s position with respect to time and in comparison, with the position of other objects used as reference points.**  **Speed: The rate of change of position (or distance traveled) with respect to time.**  **Energy: The ability to do work; required for changes to happen within a system.**  **Force: A push or pull that can change the motion of an object.**  **Potential Energy: Energy that is stored in a system or object.**  **Relative Position: Where an object is located in relation to another object.**  **System: A group of interacting or interdependent elements forming a complex whole.**  **Gravity: An attractive force that acts between all matter that has mass and is proportional to mass.**  **Electric Force: The fundamental force that occurs between two or more charged particles.**  **Magnetic Force: A force acting between magnets or moving electric charges.**  **Gravitational Field: The field around a body of mass that exerts a gravitational pull on all other objects in that field.** | | | | | |
|  | | **MONDAY** | | **TUESDAY**  **½ day** | **WEDNESDAY** | **THURSDAY** | **FRIDAY**  **Substitute** |
| Content Objective: | | SW demonstrate application of Motion energy is proportional to the mass of the moving object and grows with the square of its speed by analyzing data from the activity. | | SW will demonstrate application of **how** the motion energy of an object changes, there is inevitably some other change in energy at the same time by solving problems with 80 % accuracy. | SW demonstrate application of how a system of objects may also contain stored(potential) energy, depending on their relative positions by constructing an experiment to test gravitational potential energy with 80%accuracy. | SW demonstrate application of how a system of objects may also contain stored(potential) energy, depending on their relative positions by constructing an experiment to test gravitational potential energy with 80%accuracy. | SW demonstrate comprehension of how motion energy of an object changes, there is inevitably some other change in energy at the same time explaining answers to their questions with 80 % accuracy. |
| Language objective | | SW read to make connections about how Motion energy is proportional to the mass of the moving object and grows with the square of its speed using the data from the effect of mass data to graph with 75% accuracy. | | SW read/write to explain of **how** the motion energy of an object changes, there is inevitably some other change in energy at the same time using sentence frames with 80 % accuracy. | SW reason to justify how a system of objects may also contain stored(potential) energy, depending on their relative positions by constructing an experiment to test gravitational potential energy using sentence stems with 80% accuracy. | SW reason to justify how a system of objects may also contain stored(potential) energy, depending on their relative positions by constructing an experiment to test gravitational potential energy using sentence stems with 80% accuracy. | SW read/write to explain how motion energy of an object changes, there is inevitably some other change in energy at the same time using sentence frames with 80 % accuracy. |
| In class today | | Explore 2: The Effect of Mass | | Brain Pop: Potential Energy, Movie, Challenge, Quiz | Explore Activity 1: Potential Predictions | Explore 3: Energy in a skate park. | BirdBrain Science article: Measuring Speed |