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| M. Angileri  10-30-17 | **6th grade science** | | **Lesson Plans: Kinetic Energy #2** | | | | |
| NGSS Standard | **MS-PS3-1.**  [**PS3.A:**](http://www.nap.edu/openbook.php?record_id=13165&page=120)  S & E  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.**  Definitions 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.](http://www.nap.edu/openbook.php?record_id=13165&page=120)  [Construct and interpret graphical displays of data to identify linear and nonlinear relationships.](http://www.nap.edu/openbook.php?record_id=13165&page=61) [Scale, Proportion, and Quantity](http://www.nap.edu/openbook.php?record_id=13165&page=89) [Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.](http://www.nap.edu/openbook.php?record_id=13165&page=89) | | | | |
| Vocabulary: | | **Energy:** The ability to work or cause change.  **Kinetic Energy:** The energy an object has due to its motion. Motion energy that is proportional to the mass of the moving object and grows with the square of its velocity. KE=1/2m x v squared  **Mass:** The amount of matter in an object.  **Motion:** The state in which one object’s distance from another is changing.  **Proportional relationship:** When two values exist in a constant ratio.  **Speed:** The Ratio of change of position with respect to time.  **Mechanical Energy:** Kinetic or potential energy associated with the motion or position of an object.  **Thermal Energy:** The total energy of the particles in a substance or material.  **Chemical Energy:** The potential energy stored in chemical bonds.  **Electrical; Energy:** The energy of moving electric charges.  **Electromagnetic Energy:** The energy of light and other forms of radiation.  **Nuclear Energy:** The potential energy stored in the nucleus of an atom. | | | | | |
|  | | **MONDAY** | | **TUESDAY**  **½ day** | **WEDNESDAY** | **THURSDAY** | **FRIDAY**  **½ day end of Q1** |
| Content Objective: | | SW demonstrate application of kinetic energy by carrying out an investigation. | | SW demonstrate knowledge of kinetic energy by identifying what was learned for the literacy article. | SW demonstrate analysis of kinetic energy in projectiles by comparing 8 different items and ordering them from greatest to least. | SW demonstrate application of the scientific method by planning an investigation of kinetic energy relation to mass. | SW demonstrate application of kinetic energy by solving problems related to Kinetic energy. |
| Language objective | | SW write to collect and interpret data about the influences in kinetic energy using the lab journal. | | SW write to describe what they learned about kinetic energy using complete sentences in a KWL chart. | SW write to reflect on kinetic energy and its attributes using sentence starters. | SW write to explain their scientific investigation in the effects of mass on kinetic energy using complete sentences. | SW respond to practice questions about kinetic energy using sentence frames. |
| **Essential Question:** | | **Why are atomic models necessary?** | | **How does speed impact energy?** | **How does speed impact energy?** | **How does Mass impact energy?** | **How does speed impact energy?** |
| In class today | | Practice calculating Speed worksheet  Discuss Oops  Day 2  Do Activity 1: Speed and Motion  Evaluate data and post activity questions  A/B/ Partner activity: Inner and Outer circles  K portion of the KWL chart | | Discuss K in KWL  Fill in W  Read “an Amazing Ride”  L What did you learn  Kinetic Energy “how to“ in interactive notebook  **Possible’**  Picture vocabulary  CC Video: Ping Pong Experiment (3 questions) | \* Picture vocabulary  CC Video: Ping Pong Experiment (3 questions)  \*Literacy Quiz “an Amazing Ride”  \*Projectile’s Kinetic Energy Guided Practice | Do 2 Day 1  Demonstration using rolling chairs  Group planning time for experiment.  Highlight Claim/Evidence/Reasoning | Complete: Projectile’s Kinetic Energy Guided Practice  Concept review game  Simulation practice: calculating speed |
| Learning Target | | I can collect and analyze data to look at factors that influence kinetic energy | | I can identify what I learned about Kinetic Energy from the article. | I can analyze projectiles to predict the amount of kinetic energy used to cause damage | I can construct a scientific investigation to determine how the mass of an object affects its kinetic energy. | I can solve problems presented in the review game and simulation practice. |