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| M. Angileri  11-6-17 | **6th grade science** | | **Lesson Plans: Kinetic Energy #3** | | | | |
| 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**  **No school** | **WEDNESDAY** | **THURSDAY** | **FRIDAY** |
| Content Objective: | | SW Demonstrate comprehension of Kinetic Energy by summarizing information in a graphic organizer. | |  | SW demonstrate application of the scientific method by planning an investigation of kinetic energy relation to mass. | SW Demonstrate analysis of Kinetic Energy by finding connections between mass and speed. | SW demonstrate application of kinetic energy by solving problems related to Kinetic energy. |
| Language objective | | SW write to summarize kinetic energy using content specific vocabulary. | |  | SW write to explain their scientific investigation in the effects of mass on kinetic energy using complete sentences. | SW write to draw conclusions between mass and kinetic energy using CER. | SW respond to practice questions about kinetic energy using sentence frames. |
| **Essential Question:** | | **How does speed impact energy?** | |  | **How does mass impact energy?** | **How does Mass impact energy?** | **How does speed impact energy?** |
| In class today | | Read and discuss Kinetic Stem Scopepedia article.  Graphic Organizer  Calculating using formula  ½ m X V² = KE² | |  | Discuss Homework  Do 2 Day 1  Demonstration using rolling chairs  Group planning time for experiment.  Highlight Claim/Evidence/Reasoning  Homework: Picture description and Definition Scramble | Homework Due  Do 2 The effects of Mass on Kinetic Energy  Conduct investigation and data analysis  Complete the CER | Complete: Projectile’s Kinetic Energy Guided Practice  Concept review game  Simulation practice: calculating speed |
| Learning Target | | I can use the graphic organizer to highlight important information found in the Kinetic Energy STEM Scopepedia article | |  | I can construct a scientific investigation to determine how the mass of an object affects its kinetic energy. | I can conduct an investigation and analyze data using Claim/ Evidence/ Reasoning | I can solve problems presented in the review game and simulation practice. |

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| **Enrichment** | National Geographic article  Ecosystems Impact |  | Video  Running Lights  Review Questions | Projectile’s Kinetic energy | Finish Hoot Movie |