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| Desired Results for:  Physics Energy  **DRAFT** | |
| Essential Understanding:  There are different forms of energy, and those forms of energy can be changed from one form to another – but total energy is conserved  Established Goals:  Students will demonstrate the law of conservation of energy showing that the total energy in the mousetrap car before is all used as the car travels**. FIX WORDING**  **State Standards:**  **Inquiry Questions:** | |
| Understandings:  Students will understand . . .   1. Gather, analyze, and interpret data to describe the different forms of energy and energy transfer 2. Develop a research-based analysis of different forms of energy and energy transfer   Use research-based models to describe energy transfer mechanisms, and predict amounts of energy transferred | Essential Questions:   1. Which forms of energy can be directly observed, and which forms of energy must be inferred? 2. What evidence supports the existence of potential and kinetic energy? 3. Is there a limit to how many times energy can be transferred? Explain your answer. |
| Essential Vocabulary:  kinetic energy, potential energy, joule, work, power, machine, mechanical  advantage, efficiency, electromagnetic wave, radiant energy, radio wave, microwave,  Infrared wave, visible light, ultraviolet wave, X ray, gamma ray | |
| Resultant Knowledge:  Students will know…   1. Photos and measurements of accident investigation provide evidence of energy transfers during such events. 2. Kinetic energy often is turned into heat such as when brakes are applied to a vehicle or when space vehicles re-enter Earth’s atmosphere. 3. Energy transfers convert electricity to light, heat, or kinetic energy in motors. 4. There are ways of producing electricity using both nonrenewable resources such as such as coal or natural gas and renewable sources such as hydroelectricity or solar, wind, and nuclear power. | Resultant Skills:  Students will be able to . . .  1. measure and calculate problems associated  with work, power, mechanical advantage,  and efficiency.  2. name and describe the various forms of  electromagnetic radiation.  3. name and describe uses of electromagnetic  waves. |
| Stage 2 – Assessment Evidence | |
| Performance tasks.  Calculate relationships between kinetic  energy and potential energy.  􀂾 Compute work, power, mechanical  advantage, and efficiency of various  systems/machines. | Other Evidence.  Assessment on formula use and  understanding, critical vocabulary,  and science processes.  􀂾 Teacher observation, class   * discussion, and homework. |
| Stage 3 Learning Plan | |
| Activities | |
| Newton's Cradle/Momentum activity | |
| Specifics---  Law of Conservation of Momentum and energy  Roller Coaster simulation on <http://phet.colorado.edu/en/simulations/category/by-level/middle-school> | |
| Labs  Hot Wheels Lab  KE vs GPE  Chemical Potential Energy in a Peanut Lab | |
| Specific Activities  pHet simulation Skate Park and Ramp | |
| Lessons/homework  Essential Key Terms  Kinetic Energy  Gravitational Potential Energy  Elastic Potential Energy  Chemical Potential Energy  Mechanical Energy  Nuclear Energy  Energy Conversion  Law of Conservation of Energy  Renewable Energy  Non-renewable Energy  Ch 5 Prentice hall Sections 1-4 Notes and discussions  Section Reviews | |
| Notes  On Line at mryoast.weebly.com | |
| Pre Assessments  Keyterms Quiz  And ;   1. Which forms of energy can be directly observed, and which forms of energy must be inferred? 2. What evidence supports the existence of potential and kinetic energy? 3. Is there a limit to how many times energy can be transferred? Explain your answer. | |