Unit E 3 Overview – Work and Machines

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| **Main Ideas** | **Essential Questions** |
| 1. Work is done when a force causes something to move. 2. A machine can change the force needed to do a job, but it can’t reduce the amount of work needed. 3. Compound machines are made from six types of simple machines. | 1. What is work? 2. How can work be calculated? 3. How do machines make doing work easier? 4. What are mechanical advantage and efficiency? 5. What are the six types of simple machines? 6. How do the different types of simple machines make work easier? 7. How do you calculate ideal mechanical advantage of a machine? |
| **Skills** | |
| 1. **Explain** the meaning of work. 2. **Describe** how work and energy are related. 3. **Calculate** work and power. 4. **Explain** how machines make doing work easier. 5. **Calculate** the mechanical advantage of a machine. 6. **Calculate** the efficiency of a machine. 7. **Describe** the six types of simple machines. 8. **Explain** how the different types of simple machines make doing work easier. 9. **Calculate** the ideal mechanical advantage of the different types of simple machines. | |
| **STANDARDS** | |
| * **PSc.3.1.4 Explain the relationship among work, power and simple machines both qualitatively and quantitatively.** * Infer the work and power relationship: * Determine the component simple machines present in complex machines – categorize a wedge and screw as variations of an inclined plane , a pulley and wheel & axle as variations of a lever. * Explain the relationship between work input and work output for simple machines using the law of conservation of energy. * Define and determine ideal and actual mechanical advantage * Explain why no machine can be 100% efficient. | |

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| **Key Vocabulary** | **Review Resource** |
| 1. power, work  2. efficiency, input force, machine, mechanical advantage, output force,  3. simple machine, lever, wheel and axle, incline plane, wedge, screw, pulley | 1. Key Words - Energy 2. Unit Review - Energy 3. Ppoint - Energy   4. Class Worksheets + Lab Documents. |