**Forces, Energy, & Machines**

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| **Big Idea** | **Emerging** | **Developing** | **Proficient** | **Extending** |
| Thermal energy can be produced and transferred | Recognizes the sources of thermal energy. | Can explain the different types of thermal energy. | Selects strategies for conducting an inquiry to answer questions, predicts, analyzes evidence related to the transfer of thermal energy | Analyzes how energy is produced and transferred between objects through the design of an experiment. |
| Energy can be transformed | Identifies familiar types of energy | Describes methods of energy transformation using a variety of methods and technologies, categorizes them | Differentiates ways in which energy is transformed naturally and using technologies, including by Indigenous peoples | Designs technologies to transform energy to solve problems in the local community and beyond |
| Machines are devices that transfer force and energy | Identifies the five simple machines | Explains how a complex machine uses a combination of interacting simple machines. | Analyzes how simple machines are connected to create complex machines for specific tasks, including Indigenous designs | Designs simple and complex machines to accomplish a task |
| Recognizes that machines are used to make work easier | Describes simple machines and how they are used to move objects and make work easier (reduce the force needed to complete the task). | Analyzes the advantages and disadvantages of a variety of simple and complex machines for a particular task/ reduction of force and represents using tables, graphs, and technology | Designs simple and complex machines to accomplish a task |
| The electromagnetic force produces both electricity and magnetism | Recognizes electricity as a power source | Defines electromagnetism, identifies ways electricity is produced | Analyzes the relationship between magnetism and electricity and evaluates the impacts on the natural world of energy production | Proposes ways to utilize magnetism and electricity in environmentally friendly ways |