Standards

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ITEEA

Science of Speed is intended for middle school or high school students. Lower grade level standards are included only as a reference.

Standard 1. Students will develop an understanding of the characteristics and scope of technology.

- K-2 B. All people use tools and techniques to help them do things.
- 3-5 D. Tools, materials, and skills are used to make things and carry out tasks.
- 3-5 E. Creative thinking and economic and cultural influences shape technological development.
- 6-8 F. New products and systems can be developed to solve problems or to help do things that could not be done without the help of technology.
- 6-8 H. Technology is closely linked to creativity, which has resulted in innovation.
- 9-12 L. Inventions and innovations are the results of specific, goal-directed research.

Standard 2. Students will develop an understanding of the core concepts of technology.

- K-2 C. Tools are simple objects that help humans complete tasks.
- K-2 D. Different materials are used in making things.
- K-2 E. People plan in order to get things done.
- 3-5 I. Tools are used to design, make, use, and assess technology.
- 3-5 L. Requirements are the limits to designing or making a product or system.
- 6-8 N. Systems thinking involves considering how every part relates to others.
- 6-8 R. Requirements are the parameters placed on the development of a product or system.
- 9-12 S. Trade-off is a decision process recognizing the need for careful compromises among competing factors.
- 9-12 BB. Optimization is an ongoing process or methodology of designing or making a product and is dependent on criteria and constraints.

Standard 3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

- K-2 A. The study of technology uses many of the same ideas and skills as other subjects.
- 3-5 C. Various relationships exist between technology and other fields of study.
- 3-5 D. Technological systems often interact with one another.
- 3-5 E. A product, system, or environment developed for one setting may be applied to another setting.
- 6-8 F. Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
- 9-12 J. Technological progress promotes the advancement of science and mathematics.

Next Generation Science Standards

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MS.Engineering Design

Students who demonstrate understanding can:

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- Grade Level Connections
  - o Connections to MS-ETS1.A: Defining and Delimiting Engineering Problems include:
    - Physical Science: MS-PS3-3
  - o Connections to MS-ETS1.B: Developing Possible Solutions Problems include:
    - Physical Science: MS-PS1-6, MS-PS3-3, Life Science: MS-LS2-5
  - o Connections to MS-ETS1.C: Optimizing the Design Solution include:
    - Physical Science: MS-PS1-6
- Articulation of DCIs across grade-bands: 3-5.ETS1.A (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3); 3-5.ETS1.B (MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4); 3-5.ETS1.C (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4); HS.ETS1.A (MS-ETS1-1),(MS-ETS1-2); HS.ETS1.B (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4); HS.ETS1.C (MS-ETS1-3),(MS-ETS1-4)
- Common Core State Standards Connections:
  - o ELA/Literacy –
    - RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3)
    - RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ETS1-3)
    - RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-2),(MS-ETS1-3)
    - WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-ETS1-2)
    - WHST.6-8.8 Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources. (MS-ETS1-1)
    - WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research. (MS-ETS1-2)
    - SL.8.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. (MS-ETS1-4)
  - o Mathematics –
    - MP.2 Reason abstractly and quantitatively. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4)
    - 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3)

MS.Forces and Interactions

- MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- MS-PS2-2 Plan an investigation to provide evidence that the changing in an object's motion depend on the sum of the forces on the object and the mass of the object.
  - o Connections to other DCIs in this grade-band:
    - MS.PS3.A (MS-PS2-2); MS.PS3.B (MS-PS2-2); MS.PS3.C (MS-PS2-1); MS.ESS2.C (MS-PS2-2),(MS-PS2-4)
  - o Common Core State Standards Connections:
    - ELA/Literacy –
      - RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-PS2-1
      - RST.6-8.3 Follow precisely a multistep procedure when carrying out experiment, taking measurements, or performing technical tasks. (MS-PS2-1)
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    - Mathematics –
      - MP.2 Reason abstractly and quantitatively. (MS-PS2-1),(MS-PS2-2)
      - 6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. (MS-PS2-1), (MS-PS2-2)
      - 7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative ration number in any form using tools strategically. Apply properties of operation to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-PS2-1), (MS-PS2-2)
      - 7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations an inequalities to solve problems by reasoning about the quantities. (MS-PS2-1), (MS-PS2-2)
- MS-PS3-1 Construct and interpret graphical displays of data to describe the relationship of kinetic energy to the mass of an object and to the speed of an object.
- MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
  - o Connections to other DCIs in this grade-band:
    - MS.PS2.A (MS-PS3-1),(MS-PS3-5)
  - o Articulation of DCIs across grade-bands:
    - 4.PS3.B (MS-PS3-1); 4.PS3.C (MS-PS3-5); HS.PS3.A (MS-PS3-1),(MS-PS3-5); HS.PS3.B (MS-PS3-1),(MS-PS3-5)
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- 6-8 F. New products and systems can be developed to solve problems or to help do things that could not be done without the help of technology.
- 6-8 H. Technology is closely linked to creativity, which has resulted in innovation.
- 9-12 J. The nature and development of technological knowledge and processes are functions of the setting.
- 9-12 L. Inventions and innovations are the results of specific, goal-directed research

Standard 2. Students will develop an understanding of the core concepts of technology.

- K-2 C. Tools are simple objects that help humans complete tasks.
- K-2 D. Different materials are used in making things.
- K-2 E. People plan in order to get things done.
- 3-5 H. Resources are the things needed to get a job done, such as tools and machines, materials, information, energy, people, capital, and time.
- 3-5 I. Tools are used to design, make, use, and assess technology.
- 3-5 J. Materials have many different properties.
- 3-5 K. Tools and machines extend human capabilities, such as holding, lifting, carrying, fastening, separating, and computing.
- 3-5 L. Requirements are the limits to designing or making a product or system.
- 6-8 M. Technological systems include input, processes, output, and at times, feedback.
- 6-8 N. Systems thinking involves considering how every part relates to others.
- 6-8 R. Requirements are the parameters placed on the development of a product or system.
- 9-12 S. Trade-off is a decision process recognizing the need for careful compromises among competing factors.
- 9-12 T. Different technologies involve different sets of processes.
- 9-12 W. Systems thinking applies logic and creativity with appropriate compromises in complex real-life problems.
- 9-12 Y. The stability of a technological system is influenced by all of the components in the system, especially those in the feedback loop.

- 9-12 AA. Requirements involve the identification of the criteria and constraints of a product or system and the determination of how they affect the final design and development.
- 9-12 BB. Optimization is an ongoing process or methodology of designing or making a product and is dependent on criteria and constraints.
- 9-12 DD Quality control is a planned process to ensure that a product, service, or system meets established criteria.

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- 6-8 F. Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
- 9-12 J. Technological progress promotes the advancement of science and mathematics.

Standard 4. Students will develop an understanding of the cultural, social, economic, and political effects of technology.

- K-2 A. The use of tools and machines can be helpful or harmful.
- 3-5 C. The use of technology can have unintended consequences.
- 6-8 D. The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology's development and use.
- 6-8 E. Technology, by itself, is neither good nor bad, but decisions about the use of products and systems can result in desirable or undesirable consequences.
- 9-12 I. Making decisions about the use of technology involves weighing the trade-offs between the positive and negative effects.

Standard 8. Students will develop an understanding of the attributes of design.

- K-2 A. Everyone can design solutions to a problem.
- K-2 B. Design is a creative process.
- 3-5 C. The design process is a purposeful method of planning practical solutions to problems.
- 3-5 D. Requirements for a design include such factors as the desired elements and features of a product or system or the limits that are placed on the design.
- 6-8 E. Design is a creative planning process that leads to useful products and systems.
- 6-8 F. There is no perfect design.
- 6-8 G. Requirements for design are made up of criteria and constraints.
- 9-12 H. The design process includes defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results.
- 9-12 J. The design needs to be continually checked and critiqued, and the ideas of the design must be redefined and improved.

Standard 9. Students will develop an understanding of engineering design.

- K-2 A. The engineering design process includes identifying a problem, looking for ideas, developing solutions, and sharing solutions with others.
- K-2 B. Expressing ideas to others verbally and through sketches and models are an important part of the design process.
- 3-5 C. The engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution(s), making the item, evaluating it, and presenting the results.
- 3-5 D. When designing an object, it is important to be creative and consider all ideas.
- 3-5 E. Models are used to communicate and test design ideas and processes.
- 6-8 F. Design involves a set of steps, which can be performed in different sequences and repeated as needed.
- 6-8 G. Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.
- 6-8 H. Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
- 9-12 I. Established design principles are used to evaluate existing designs, to collect data, and to guide the design process.
- 9-12 J. Engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
- 9-12 K. A prototype is a working model used to test a design concept by making actual observations and necessary adjustments.
- 9-12 L. The process of engineering design takes into account a number of factors.

Standard 10. Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

- K-2 A. Asking questions and making observations helps a person to figure out how things work.
- C. Troubleshooting is a way of finding out why something does not work so that it can be fixed.
- D. Invention and innovation are creative ways to turn ideas into real things.
- 3-5 E. The process of experimentation, which is common in science, can also be used to solve technological problems.
- G. Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it.
- 6-8 H. Some technological problems are best solved through experimentation.
- 9-12 I. Research and development is a specific problem-solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace.
- 9-12 J. Technological problems must be researched before they can be solved.
- 9-12 K. Not all problems are technological, and not every problem can be solved using technology.
- 9-12 L. Many technological problems require a multidisciplinary approach.

Standard 11. Students will develop the abilities to apply the design process.

- K-2 A. Brainstorm people's needs and wants and pick some problems that can be solved through the design process.
- K-2 B. Build or construct an object using the design process
- K-2 C. Investigate how things are made and how they can be improved.
- 3-5 D. Identify and collect information about everyday problems that can be solved by technology, and

generate ideas and requirements for solving a problem.

- 3-5 E. The process of designing involves presenting some possible solutions in visual form and then selecting the best solution(s) from many.
- 3-5 F. Test and evaluate the solutions for the design problem.
- 3-5 G. Improve the design solutions.
- 6-8 I. Specify criteria and constraints for the design.
- 6-8 J. Make two-dimensional and three-dimensional representations of the designed solution.
- 6-8 K. Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.
- 6-8 L. Make a product or system and document the solution.
- 9-12 M. Identify the design problem to solve and decide whether or not to address it.
- 9-12 N. Identify criteria and constraints and determine how these will affect the design process.
- 9-12 O. Refine a design by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product.
- 9-12 P. Evaluate the design solution using conceptual, physical, and mathematical models at various intervals of the design process in order to check for proper design and to note areas where improvements are needed.
- 9-12 Q. Develop and produce a product or system using a design process.
- 9-12 R. Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models.

Standard 12. Students will develop the abilities to use and maintain technological products and systems.

- K-2 A. Discover how things work.
- K-2 B. Use hand tools correctly and safely and be able to name them correctly.
- K-2 C. Recognize and use everyday symbols.
- 3-5 E. Select and safely use tools, products, and systems for specific tasks.
- 3-5 F. Use computers to access and organize information.
- 3-5 G. Use common symbols, such as numbers and words, to communicate key ideas.
- 6-8 H. Use information provided in manuals, protocols, or by experienced people to see and understand how things work.
- 6-8 J. Use computers and calculators in various applications.
- 6-8 K. Operate and maintain systems in order to achieve a given purpose.
- 9-12 L. Document processes and procedures and communicate them to different audiences using appropriate oral and written techniques.
- 9-12 M. Diagnose a system that is malfunctioning and use tools, materials, machines, and knowledge to repair it.
- 9-12 N. Troubleshoot, analyze, and maintain systems to ensure safe and proper function and precision.
- 9-12 O. Operate systems so that they function in the way they were designed.
- 9-12 P. Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to communicate.

Standard 13. Students will develop the abilities to assess the impact of products and systems.

- K-2 A. Collect information about everyday products and systems by asking questions.
- K-2 C. Compare, contrast, and classify collected information in order to identify patterns.
- 3-5 E. Examine the trade-offs of using a product or system and decide when it could be used.
- 6-8 F. Design and use instruments to gather data.
- 6-8 G. Use data collected to analyze and interpret trends in order to identify the positive and negative effects of a technology.
- 6-8 H. Identify trends and monitor potential consequences of technological development.
- 6-8 I. Interpret and evaluate the accuracy of the information obtained and determine if it is useful.
- 9-12 J. Collect information and evaluate its quality.
- 9-12 L. Use assessment techniques, such as trend analysis and experimentation, to make decisions about the future development of technology.

Standard 17. Students will develop an understanding of and be able to select and use information and communication technologies.

- K-2 C. People use symbols when they communicate by technology.
- 3-5 D. The processing of information through the use of technology can be used to help humans make decisions and solve problems.
- 3-5 E. Information can be acquired and sent through a variety of technological sources, including print and electronic media.
- 6-8 K. The use of symbols, measurements, and drawings promotes a clear communication by providing a common language to express ideas.
- 9-12 L. Information and communication technologies include the inputs, processes, and outputs associated with sending and receiving information.
- 9-12 P. There are many ways to communicate information, such as graphic and electronic means.
- 9-12 Q. Technological knowledge and processes are communicated using symbols, measurement, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli.

Standard 19. Students will develop an understanding of and be able to select and use manufacturing technologies.

- K-2 B. Manufactured products are designed.
- 3-5 C. Processing systems convert natural materials into products.
- 3-5 D. Manufacturing processes include designing products, gathering resources, and using tools to separate, form, and combine materials in order to produce products.
- 3-5 F. Manufacturing systems use mechanical processes that change the form of materials through the processes of separating, forming, combining, and conditioning them.
- 6-8 H. The manufacturing process includes the designing, development, making, and servicing of products and systems.
- 9-12 M. Materials have different qualities and may be classified as natural, synthetic, or mixed.

Next Generation Science Standards

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MS. Engineering Design
Students who demonstrate understanding can:

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- Grade Level Connections
  - Connections to MS-ETS1.A: Defining and Delimiting Engineering Problems include:
    - Physical Science: MS-PS3-3
  - Connections to MS-ETS1.B: Developing Possible Solutions Problems include:
    - Physical Science: MS-PS1-6, MS-PS3-3; Life Science: MS-LS2-5
  - Connections to MS-ETS1.C: Optimizing the Design Solution include:
    - Physical Science: MS-PS1-6
- Articulation of DCIs across grade-bands: 3-5.ETS1.A (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3); 3-5.ETS1.B (MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4); 3-5.ETS1.C (MS-ETS1-1),(MSETS1-2),(MS-ETS1-3),(MS-ETS1-4); HS.ETS1.A (MS-ETS1-1),(MS-ETS1-2); HS.ETS1.B (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4); HS.ETS1.C (MS-ETS1-3),(MS-ETS1-4)
- Common Core State Standards Connections:
  - ELA/Literacy –
    - RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3)
    - RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ETS1-3)
    - RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-2),(MS-ETS1-3)
    - WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-ETS1-2)
    - WHST.6-8.8 Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources. (MS-ETS1-1)
    - WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research. (MS-ETS1-2)
    - SL.8.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. (MS-ETS1-4)
  - Mathematics –
    - MP.2 Reason abstractly and quantitatively. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4)
    - 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3)

MS. Forces and Interactions

- MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- MS-PS2-2 Plan an investigation to provide evidence that the changing in an object's motion depend on the sum of the forces on the object and the mass of the object.
  - Connections to other DCIs in this grade-band:
    - MS.PS3.A (MS-PS2-2); MS.PS3.B (MS-PS2-2); MS.PS3.C (MS-PS2-1); MS.ESS2.C (MS-PS2-2),(MS-PS2-4)
  - Common Core State Standards Connections
    - ELA/Literacy
      - RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-PS2-1
      - RST.6-8.3 Follow precisely a multistep procedure when carrying out experiment, taking measurements, or performing technical tasks. (MS-PS2-1)
      - WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-PS2-1)
    - Mathematics
      - MP.2 Reason abstractly and quantitatively. (MS-PS2-1), (MS-PS2-2)
      - 6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. (MS-PS2-1), (MS-PS2-2)
      - 7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative ration number in any form using tools strategically. Apply properties of operation to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation an estimation strategies. (MS-PS2-1), (MS-PS2-2)
      - 7.EE.B.4 Use variable to represent quantities in a real-world or mathematical problem, and construct simple equations an inequalities to solve problems by reasoning about the quantities. (MS-PS2-1), (MS-PS2-2)
- MS-PS3-1 Construct and interpret graphical displays of data to describe the relationship of kinetic energy to the mass of an object and to the speed of an object.
- MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
  - Connections to other DCIs in this grade-band:
    - MS.PS2.A (MS-PS3-1),(MS-PS3-5)
  - Articulation of DCIs across grade-bands:
    - 4.PS3.B (MS-PS3-1); 4.PS3.C (MS-PS3-5); HS.PS3.A (MS-PS3-1), (MS-PS3-5);HS.PS3.B (MS-PS3-1) ,(MS-PS3-5)
  - Common Core State Standards Connections:
    - ELA/Literacy
      - RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (MS-PS3-1), (MS-PS3-5)
      - RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks (MS-PS3-3),(MS-PS3-4)
      - RST.6-8.7 Integrate quantitative or technical information expressed in word in a text with a verso of that information expressed visually (e.g., in a flowchart, diagram, mode, graph, or table). (MS-PS3-1)
      - WHST.6-8.1 Write arguments focused on discipline content. (MS-PS3-5)
    - Mathematics
      - MP.2 Reason abstractly and quantitatively. (MS-PS3-1), (MS-PS3-5)
      - 6.RP.A.1 Understand the concept of ratio and use ratio language to describe a ratio relationship between two quantities. (MS-PS3-1), (MS-PS3-5)
      - 6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship. (MS-PS3-1)