Educational STANDARDS ALIGNMENT
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Primary Challenges
Engineering Inspired By Nature Standards

NGSS

1-LS1-1 – Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

1-LS3-1 – Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

2-LS2-2 – Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-LS4-1 – Make observations of plants and animals to compare the diversity of life in different habitats.

K-2-ETS1-1 – Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 – Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 – Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

3-LS4-3 – Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 – Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

3-LS3-1 – Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

3-LS3-2 – Use evidence to support the explanation that traits can be influenced by the environment.

3-LS4-2 – Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

2-ESS1-1 – Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
Common Core Mathematics

CCSS.Math.Practice.MP2 - Reason abstractly and quantitatively.
CCSS.Math.Practice.MP4 - Model with mathematics.
CCSS.Math.Practice.MP5 - Use appropriate tools strategically.
CCSS.Math.Content.1.MD.A.1 - Order three objects by length; compare the lengths of two objects indirectly by using a third object.
CCSS.Math.Content.1.MD.C.4 - Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
CCSS.Math.Content.2.MD.B.5 - Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
CCSS.Math.Content.2.MD.D.10 - Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

CCSS.Math.Content.2.NBT.A.1 - Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

CCSS.Math.Content.3.MD.B.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

CCSS.Math.Content.3.MD.B.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.
Engineering Inspired By Nature Standards

Common Core ELA

CCSS.ELA–Literacy.RI.1.1 - Ask and answer questions about key details in a text.

CCSS.ELA–Literacy.RI.1.2 - Identify the main topic and retell key details of a text.

CCSS.ELA–Literacy.W.1.7 - Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).

CCSS.ELA–Literacy.W.1.8 - With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

CCSS.ELA–Literacy.RI.2.1 - Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.ELA–Literacy.RI.2.3 - Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

CCSS.ELA–Literacy.RI.2.6 - Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

CCSS.ELA–Literacy.RI.2.8 - Describe how reasons support specific points the author makes in a text.

CCSS.ELA–Literacy.W.2.6 - With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

CCSS.ELA–Literacy.W.2.7 - Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

CCSS.ELA–Literacy.W.2.8 - Recall information from experiences or gather information from provided sources to answer a questions.

CCSS.ELA–Literacy.RI.2.8 - Identify the main topic and retell key details of a text.

CCSS.ELA–Literacy.RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CCSS.ELA–Literacy.RI.3.2 - Determine the main idea of a text; recount the key details and explain how they support the main idea.

CCSS.ELA–Literacy.RI.3.3 - Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

CCSS.ELA–Literacy.W.3.1 - Write opinion pieces on topics or texts, supporting a point of view with reasons.

CCSS.ELA–Literacy.W.3.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA–Literacy.RI.3.4 - Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
Making Music Standards

NGSS

K-2-ETS1-1 - Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 - Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 - Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

3-5-ETS1-1 - Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 - Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 - Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

2-PS1-2 - Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2-PS1-3 - Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

3-PS2-2 - Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2 - Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3 - Ask questions and predict outcomes about the changes in energy that occur when objects collide.

4-PS3-4 - Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4-PS4-1 - Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.
Making Music Standards

Common Core ELA

CCSS.ELA–Literacy.RI.2.1 - Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.ELA–Literacy.RI.2.2 - Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within the text.

CCSS.ELA–Literacy.RI.2.3 - Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

CCSS.ELA–Literacy.W.2.1 - Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that the opinion, use linking words (e.g. because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

CCSS.ELA–Literacy.W.2.2 - Write informative/explanatory texts which they introduce a topic, use facts and definitions to develop points and provide a concluding statement or section.

CCSS.ELA–Literacy.W.2.7 - Participate in shared research and writing project to produce a report; record science observations.

CCSS.ELA–Literacy.W.2.8 - Recall information from experiences or gather information from provided sources to answer a question.

CCSA.ELA–Literacy.SL.2.1 - Participate in collaborative conversations with diverse partners about grade topics and texts with peers and adults in small and larger groups.

CCSA.ELA–Literacy.SL.2.1A - Follow agreed upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion.)

CCSA.ELA–Literacy.SL.2.1B - Build on others’ talk in conversations by linking their comments to the remarks of others.

CCSA.ELA–Literacy.SL.2.1C - Ask for clarification and further explanation as needed about the topics and texts under discussion.

CCSA.ELA–Literacy.SL.2.2 - Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

CCSA.ELA–Literacy.SL.2.3 - Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

CCSA.ELA–Literacy.SL.2.4 - Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

CCSA.ELA–Literacy.SL.2.5 - Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experience when appropriate to clarify ideas, thoughts and feelings.

CCSS.ELA–Literacy.RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers.

CCSS.ELA–Literacy.RI.3.4 - Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
Common Core ELA (continued)

**CCSS.ELA–Literacy.RI.3.2** – Determine the main ideas of a text; recount the key details and explain how they support the main idea.

**CCSS.ELA–Literacy.RI.3.6** – Distinguish their own point of view from that of the author of a text.

**CCSS.ELA–Literacy.RI.3.7** – Use informed gained form illustrations and the words in a text to demonstrate understanding of the text (e.g. where, when, why, and how key events occur.)

**CCSS.ELA–Literacy.RI.3.8** – Describe the logical connection between particular sentence and paragraphs in a text (e.g., comparison, cause/effect, first/second/third/sequence.)

**CCSS.ELA–Literacy.W3.1** – Write opinion pieces on topics or texts, supporting a point of view with reasons.

**CCSS.ELA–Literacy.W3.1B** – Provide reasons that support the opinion.

**CCSS.ELA–Literacy.W3.1C** – Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.

**CCSS.ELA–Literacy.W3.2** – Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**CCSS.ELA–Literacy.W3.2B** – Develop the topic with facts, definitions, and details.

**CCSS.ELA–Literacy.SL.3.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.

**CCSS.ELA–Literacy.SL.3.1A** – Come to discussions prepared having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.

**CCSS.ELA–Literacy.SL.3.1B** – Follow agreed upon rules for discussion (e.g. gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion.)

**CCSS.ELA–Literacy.SL.3.1C** – Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.

**CCSS.ELA–Literacy.SL.3.1D** – Explain their own ideas and understanding in light of the discussion.

**CCSS.ELA–Literacy.SL.3.2** – Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and or orally.

**CCSS.ELA–Literacy.SL.3.3** – Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

**CCSS.ELA–Literacy.SL.3.6** – Speak in complete sentences when appropriate to the task and situation in order to provide requested detail or clarification.
Pinball Designer Standards

NGSS

K-2-ETS1-1 - Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 - Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 - Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

2-PS1-2 - Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

3-PS2-1 - Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

3-PS2-2 - Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.

Common Core Mathematics

CCSS.Math.Practice.MP2 - Reason abstractly and quantitatively.

CCSS.Math.Practice.MP4 - Model with mathematics.

CCSS.Math.Practice.MP5 - Use appropriate tools strategically.
Common Core ELA

**CCSS.ELA-Literacy.RI.2.1** - Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

**CCSS.ELA-Literacy.RI.2.7** - Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

**CCSS.ELA-Literacy.W.2.7** - Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

**CCSS.ELA-Literacy.SL.2.1** - Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

**CCSS.ELA-Literacy.SL.2.5** - Create audio recordings or poems; add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

**CCSS.ELA-Literacy.RI.3.1** - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

**CCSS.ELA-Literacy.RI.3.3** - Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

**CCSS.ELA-Literacy.W.3.7** - Conduct short research projects that build knowledge about a topic.

**CCSS.ELA-Literacy.W.3.8** - Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

**CCSS.ELA-Literacy.SL.3.1** - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.
NGSS

K-2-ETS1-1 – Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 – Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 – Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

K-PS2-1 – Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

K-PS2-2 – Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull.

Common Core Mathematics


CCSS.Math.Content.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

CCSS.Math.Content.K.MD.A.2 – Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

CCSS.Math.Content.1.MD.A.1 – Order three objects by length; compare the lengths of two objects indirectly by using a third object.

CCSS.Math.Content.1.MD.A.2 – Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
Common Core ELA

**CCSS.ELA–Literacy.RI.K.1** - With prompting and support, ask and answer questions about key details in a text.

**CCSS.ELA–Literacy.RI.K.3** - With prompting and support, describe the connection between individuals, events, ideas, or pieces of information in a text.

**CCSS.ELA–Literacy.W.K.7** - Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

**CCSS.ELA–Literacy.SL.K.3** - Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

**CCSS.ELA–Literacy.SL.K.5** - Add drawings or other visual displays to descriptions as desired to provide additional detail.

**CCSS.ELA–Literacy.RI.1.1** - Ask and answer questions about key details in a text.

**CCSS.ELA–Literacy.RI.1.3** - Describe the connection between individuals, events, ideas, or pieces of information in a text.

**CCSS.ELA–Literacy.W.1.2** - Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

**CCSS.ELA–Literacy.SL.1.1** - Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

**CCSS.ELA–Literacy.SL.1.5** - Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
Straw Rockets Standards

NGSS

K-2-ETS1-1 – Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 – Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 – Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

2-PS1-2 – Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

3-PS2-1 – Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

3-PS2-2 – Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.

Common Core Mathematics


CCSS.Math.Practice.MP4 – Model with mathematics.

CCSS.Math.Practice.MP5 – Use appropriate tools strategically.

CCSS.Math.Content.2.MD.D.10 – Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

CCSS.Math.Content.3.MD.B.4 – Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
Common Core ELA

**CCSS.ELA-Literacy.RI.2.1** – Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

**CCSS.ELA-Literacy.RI.2.3** – Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

**CCSS.ELA-Literacy.W.2.7** – Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

**CCSS.ELA-Literacy.W.2.8** – Recall information from experiences or gather information from provided sources to answer a questions.

**CCSS.ELA-Literacy.SL.2.1** – Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

**CCSS.ELA-Literacy.RI.3.1** – Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

**CCSS.ELA-Literacy.RI.3.3** – Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

**CCSS.ELA-Literacy.W.3.7** – Conduct short research projects that build knowledge about a topic.

**CCSS.ELA-Literacy.W.3.8** – Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

**CCSS.ELA-Literacy.SL.3.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.
Grades 4-6

Elementary Challenges
NGSS

4-PS3-1 – Use evidence to construct an explanation relating the speed of an object to the energy of that object.

3-5-ETS1-1 – Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 – Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Common Core Mathematics


CCSS.Math.Practice.MP4 – Model with mathematics.

CCSS.Math.Practice.MP5 – Use appropriate tools strategically.

CCSS.Math.Content.4.MD.B.4 – Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

CCSS.Math.Content.5.OA.A.1 – Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

CCSS.Math.Content.5.OA.A.2 – Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.
Common Core ELA

**CCSS.ELA-Literacy.RI.4.1** - Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

**CCSS.ELA-Literacy.RI.4.3** - Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

**CCSS.ELA-Literacy.W.4.2** - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**CCSS.ELA-Literacy.W.4.4** - Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

**CCSS.ELA-Literacy.W.4.8** - Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

**CCSS.ELA-Literacy.W.5.7** - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

**CCSS.ELA-Literacy.W.5.8** - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.

**CCSS.ELA-Literacy.W.5.9** - Draw evidence from literary or informational texts to support analysis, reflection, and research.

**CCSS.ELA-Literacy.RI.5.3** - Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

**CCSS.ELA-Literacy.RI.5.9** - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
**Navigating the Digital Universe Standards**

**NGSS**

**3-5-ETS1-1** - Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

**3-5-ETS1-2** - Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**3-5-ETS1-3** - Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

**CSTA K-12 Computer Science Standards**

**1A-IC-1** - Work respectfully and responsibly with others online.

**ISTE Standards**

**1.2a** - Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

**1.2b** - Students engage in positive, safe, legal and ethical behavior when using technology, including in social interactions online or when using networked devices.

**1.2.c** - Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**1.2.d** - Students manage their personal data to maintain digital privacy and security, and are aware of data-collection technology used to track their navigation online.

**1.3.a** - Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

**1.3.b** - Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.
Navigating the Digital Universe Standards

Common Core ELA

CCSSELA-Literacy.W3.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSSELA-Literacy.W3.2A - Introduce a topic and group related information together include illustrations when useful to aiding comprehension

CCSSELA-Literacy.W3.2B - Develop the topic with facts, definitions, and details.

CCSSELA-Literacy.W3.3 - Write narratives to develop real or imagine experiences or events using effective technique, descriptive details, and clear event sequences.

CCSSELA-Literacy.W3.3A - Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally

CCSSELA-Literacy.W3.3B - Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations

CCSSELA-Literacy.W3.3D - Provide a sense of closure

CCSSELA-Literacy.RI.3.5 - Use text features and search tools (e.g., keywords, sidebars, hyperlinks) to locate information relevant to a given topic efficiently

CCSSELA-Literacy.RI.3.7 - Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)

CCSSELA-Literacy.W.4.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSSELA-Literacy.W.4.2A - Introduce a topic clearly, and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension

CCSS.ELA-LITERACY.W.4.2B - Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic

CCSS.ELA-LITERACY.W.4.2C - Link ideas within categories of information using words and phrases (e.g., another, for example, also, because)

CCSS.ELA-LITERACY.W.4.2D - Use precise language and domain-specific vocabulary to inform about or explain the topic

CCSS.ELA-LITERACY.W.4.2E - Provide a concluding statement or section related to the information or explanation presented

CCSS.ELA-LITERACY.W.4.4 - Produce clear and coherent writing in which the development and organization are appropriate to the task, purpose, and audience.

CCSS.ELA-LITERACY.SL.4.4 - Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.4.5 - Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

CCSS.ELA-LITERACY.L.4.1 - Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

CCSS.ELA-LITERACY.L.4.2 - Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

CCSS.ELA-LITERACY.L.4.3 - Use knowledge of language and its conventions when writing, speaking, reading, or listening.
Programming Each Other Standards

NGSS

3-5-ETS1-1 – Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 – Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Common Core Mathematics

1A-AP-08 – Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.

1B-AP-08 – Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

1A-AP-09 – Model the way programs store and manipulate data by using numbers or other symbols to represent information.

1B-AP-09 – Model how computer hardware and software work together as a system to accomplish tasks.

1A-AP-10 – Develop programs with sequences and simple loops to express ideas or address a problem.

1B-AP-10 – Create programs that include sequences, events, loops, and conditionals.

1A-AP-11 – Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.

1B-AP-11 – Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.

1B-AP-12 – Modify, remix, or incorporate portions of an existing program into one’s own work, to develop something new or add more advanced features.

1A-AP-12 – Develop plans that describe a program’s sequence of events, goals, and expected outcomes.

1B-AP-13 – Use an iterative process to plan the development of a program by including others’ perspectives and considering user preferences.

1A-AP-14 – Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

1B-AP-15 – Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.

1B-AP-16 – Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.

1A-AP-15 – Using correct terminology, describe steps taken and choices made during the iterative process of program development.

1A-AP-17 – Describe choices made during program development using code comments, presentations, and demonstrations.
Programming Each Other Standards

Common Core ELA

CCSS.ELA-LITERACY.L.4.3 - Use knowledge of language and its conventions when writing, speaking, reading, or listening

CCSS.ELA-Literacy.W.4.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-LITERACY.W.4.4 - Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.4.5 - With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

CCSS.ELA-LITERACY.SL.4.1 - Engage effectively in a range of collaborative discussions with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.4.4 - Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.4.5 - Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

CCSS.ELA-LITERACY.SL.4.6 - Differentiate between contexts that call for formal English and situations where informal discourse is appropriate; use formal English when appropriate to task and situation.
NGSS

3-PS2-1 – Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

3-PS2-2 – Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-1 – Use evidence to construct an explanation relating the speed of an object to the energy of that object.

3-5-ETS1-1 – Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 – Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Common Core Mathematics


CCSS.Math.Practice.MP4 – Model with mathematics.

CCSS.Math.Practice.MP5 – Use appropriate tools strategically.

CCSS.Math.Content.3.MD.C.5 – Recognize area as an attribute of plane figures and understand concepts of area measurement.

CCSS.Math.Content.3.MD.C.6 – Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

CCSS.Math.Content.3.MD.C.7 – Relate area to the operations of multiplication and addition.

CCSS.Math.Content.3.G.A.1 – Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

CCSS.Math.Content.4.OA.A.1 – Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

CCSS.Math.Content.4.OA.A.2 – Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

CCSS.Math.Content.4.G.A.2 – Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

CCSS.Math.Content.4.G.A.3 – Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
**Common Core ELA**

**CCSS.ELA-Literacy.RI.3.1** – Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

**CCSS.ELA-Literacy.RI.3.3** – Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

**CCSS.ELA-Literacy.RI.3.8** – Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

**CCSS.ELA-Literacy.W.3.7** – Conduct short research projects that build knowledge about a topic.

**CCSS.ELA-Literacy.W.3.8** – Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

**CCSS.ELA-Literacy.SL.3.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.

**CCSS.ELA-Literacy.RI.4.1** – Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

**CCSS.ELA-Literacy.RI.4.3** – Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

**CCSS.ELA-Literacy.RI.4.9** – Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

**CCSS.ELA-Literacy.W.4.2** – Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**CCSS.ELA-Literacy.W.4.7** – Conduct short research projects that build knowledge through investigation of different aspects of a topic.

**CCSS.ELA-Literacy.W.4.8** – Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

**CCSS.ELA-Literacy.SL.4.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.
Middle School Challenges

Grades 6-8
Computerized Driver Standards

NGSS

**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.

**MS-LS1-8** – Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

**HS-PS2-3** – Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.

**HS-ETS1-1** – Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**HS-ETS1-3** – Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

**ISTE Standards**

1.1 – Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

1.1.d – Understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies

1.3 – Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

1.3.a – Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

1.3.b – Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

1.3.c – Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

1.3.d – Build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions

1.4 – Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

1.4.a – Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
ISTE Standards (continued)

1.4.b – Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

1.4.c – Students develop, test and refine prototypes as part of a cyclical design process.

1.4.d – Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

1.5 – Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

1.5.a – Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

1.5.b – Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

1.5.c – Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

1.5.d – Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

1.6 – Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. See the Creative Communicator standards in action. Creative Communicator Playlist

1.6.a – Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

1.6.b – Students create original works or responsibly repurpose or remix digital resources into new creations.

1.6.c – Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

1.6.d – Students publish or present content that customizes the message and medium for their intended audiences.

Common Core ELA

CCSS.ELA-LITERACY.W.6.1 – Introduce claim(s) and organize the reasons and evidence clearly.

CCSS.ELA-LITERACY.W.6.1.A – Introduce claim(s) and organize the reasons and evidence clearly.

CCSS.ELA-LITERACY.W.6.1.B – Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.6.2 – Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.6.2.D – Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.6.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)
Common Core ELA (continued)

CCSS.ELA-LITERACY.W.6.5 – With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 6 here.)

CCSS.ELA-Literacy.SL.6.1 – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.6.1.B – Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

CCSS.ELA-LITERACY.SL.6.1.C – Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

CCSS.ELA-LITERACY.SL.6.4 – Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

CCSS.ELA-LITERACY.SL.6.5 – Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

CCSS.ELA-Literacy.RST.6-8.3 – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CCSS.ELA-Literacy.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).

CCSS.ELA-LITERACY.W.9-10.1 – Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

CCSS.ELA-LITERACY.W.9-10.1.A – Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.W.9-10.1.B – Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience’s knowledge level and concerns.

CCSS.ELA-LITERACY.W.9-10.2 – Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

CCSS.ELA-LITERACY.W.9-10.2.D – Use precise language and domain-specific vocabulary to manage the complexity of the topic.

CCSS.ELA-LITERACY.W.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.9-10.5 – Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

CCSS.ELA-LITERACY.SL.9-10.1 – Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.
Common Core ELA (continued)

**CCSS.ELA-LITERACY.SL.9-10.1.B** – Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

**CCSS.ELA-LITERACY.SL.9-10.1.C** – Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.

**CCSS.ELA-LITERACY.SL.9-10.4** – Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

**CCSS.ELA-LITERACY.SL.9-10.5** – Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

**CCSS.ELA-LITERACY.RST.9-10.3** – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

**CCSS.ELA-LITERACY.RST.9-10.7** – Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
Cybersecurity: Keeping Our Networks Secure Standards

**NGSS**

**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-ETS1-4** – 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.

**CSTA K-12 Computer Science Standards**

**1A-NI-04** – Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access.

**1B-CS-01** – Describe how internal and external parts of computing devices function to form a system.

**1B-CS-02** – Model how computer hardware and software work together as a system to accomplish tasks.

**1B-CS-03** – Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.

**1B-NI-04** – Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the internet, and reassembled at the destination.

**1B-NI-05** – Discuss real-world cybersecurity problems and how personal information can be protected.

**1B-IC-18** – Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.

**2-CS-01** – Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.

**2-NI-04** – Model the role of protocols in transmitting data across networks and the internet.

**2-NI-05** – Explain how physical and digital security measures protect electronic information.

**2-NI-06** – Apply multiple methods of encryption to model the secure transmission of information.

**2-IC-20** – Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

**3A-NI-04** – Evaluate the scalability and reliability of networks by describing the relationship between routers, switches, servers, topology, and addressing.

**3A-NI-05** – Give examples to illustrate how sensitive data can be affected by malware and other attacks.
Common Core ELA

**CCSS.ELA-Literacy.RST.6-8.3** - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CCSS.ELA-LITERACY.W.6.1** - Introduce claim(s) and organize the reasons and evidence clearly.

**CCSS.ELA-LITERACY.W.6.1.B** - Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

**CCSS.ELA-LITERACY.W.6.2** - Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

**CCSS.ELA-LITERACY.W.6.2.D** - Use precise language and domain-specific vocabulary to inform about or explain the topic.

**CCSS.ELA-LITERACY.W.6.4** - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

**CCSS.ELA-LITERACY.W.6.5** - With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 6 here.)

**CCSS.ELA-Literacy.SL.6.1** - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

**CCSS.ELA-LITERACY.SL.6.1.B** - Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

**CCSS.ELA-LITERACY.SL.6.1.C** - Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

**CCSS.ELA-LITERACY.SL.6.4** - Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

**CCSS.ELA-LITERACY.SL.6.5** - Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

**CCSS.ELA-LITERACY.SL.6.6** - Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 for specific expectations.)
NGSS

**MS-PS1-2** – Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

**MS-PS1-1** – Develop models to describe the atomic composition of simple molecules and extended structures.

**MS-PS1-4** – Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance.

**MS-PS2-2** – Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

**MS-PS3-1** – 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.

**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.

**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.
Common Core Mathematics

**CCSS.Math.Practice.MP2** – Reason abstractly and quantitatively.

**CCSS.Math.Practice.MP4** – Model with mathematics.

**CCSS.Math.Content.6.RP.A.3** – Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

**CCSS.Math.Content.6.SP.B.4** – Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

**CCSS.Math.Content.6.SP.B.5** – Summarize numerical data sets in relation to their context.

**CCSS.Math.Content.6.NS.C.5** – Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

**CCSS.Math.Content.7.EE.A.2** – Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that “increase by 5%” is the same as “multiply by 1.05.”

**CCSS.Math.Content.7.EE.B.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. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

**CCSS.Math.Content.8.NS.A.1** – Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
Fuel Cell Standards

Common Core ELA

**CCSS.ELA-Literacy.RST.6-8.1** - Cite specific textual evidence to support analysis of science and technical texts.

**CCSS.ELA-Literacy.RST.6-8.3** - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CCSS.ELA-Literacy.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).

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.WHST.6-8.8** - Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

**CCSS.ELA-Literacy.WHST.6-8.9** - Draw evidence from informational texts to support analysis reflection, and research.

**CCSS.ELA-Literacy.SL.7.1** - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.
Glider Standards

NGSS

**MS-PS2-2** – Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.

**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.

**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.

Common Core Mathematics

**CCSS.Math.Practice.MP2** – Reason abstractly and quantitatively.

**CCSS.Math.Practice.MP4** – Model with mathematics.

**CCSS.Math.Content.6.RP.A.1** – Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”

**CCSS.Math.Content.6.RP.A.2** – Understand the concept of a unit rate $\frac{a}{b}$ associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.”

**CCSS.Math.Content.6.EE.A.2** – Write, read, and evaluate expressions in which letters stand for numbers.

**CCSS.Math.Content.7.RP.A.2** – Recognize and represent proportional relationships between quantities.

**CCSS.Math.Content.7.EE.B.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.
Common Core Mathematics (continued)

CCSS.Math.Content.7.EE.B.4 - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

CCSS.Math.Content.8.EE.A.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

CCSS.Math.Content.8.EE.A.2 - Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

CCSS.Math.Content.8.F.A.3 - Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

Common Core ELA

CCSS.ELA-Literacy.RST.6-8.1 - Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-Literacy.RST.6-8.3 - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CCSS.ELA-Literacy.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).

CCSS.ELA-Literacy.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.

CCSS.ELA-Literacy.RST.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.

CCSS.ELA-Literacy.RST.6-8.8 - Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

CCSS.ELA-Literacy.RST.6-8.9 - Draw evidence from informational texts to support analysis reflection, and research.

CCSS.ELA-Literacy.SL.6.1 - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. (Grade 7 standard: CCSS.ELA-Literacy.SL.7.1 Grade 8 standard: CCSS.ELA-Literacy.SL.8.1)
NGSS

3-5-ETS1-1 – Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 – Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

MS-PS2-2 – Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.

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.
Gravity Cruiser Standards

Common Core Mathematics

CCSS.Math.Practice.MP4 – Model with mathematics.
CCSS.Math.Practice.MP5 – Use appropriate tools strategically.
CCSS.Math.Content.5.OA.A.1 – Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
CCSS.Math.Content.5.OA.A.2 – Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.
CCSS.Math.Content.6.EE.A.2 – Write, read, and evaluate expressions in which letters stand for numbers.
CCSS.Math.Content.6.EE.C.9 – Use variables to represent two quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

CCSS.Math.Content.7.EE.B.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. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
CCSS.Math.Content.7.EE.B.4 – Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
Gravity Cruiser Standards

Common Core ELA

**CCSS.ELA-Literacy.RI.5.3** - Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

**CCSS.ELA-Literacy.RI.5.9** - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgably.

**CCSS.ELA-Literacy.W.5.7** - Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

**CCSS.ELA-Literacy.W.5.8** - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.

**CCSS.ELA-Literacy.W.5.9** - Draw evidence from literary or informational texts to support analysis, reflection, and research.

**CCSS.ELA-Literacy.SL.5.1** - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.

**CCSS.ELA-Literacy.RST.6-8.1** - Cite specific textual evidence to support analysis of science and technical texts.

**CCSS.ELA-Literacy.RST.6-8.3** - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CCSS.ELA-Literacy.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).

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.WHST.6-8.8** - Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

**CCSS.ELA-Literacy.WHST.6-8.9** - Draw evidence from informational texts to support analysis, reflection, and research.

**CCSS.ELA-Literacy.SL.7.1** - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.
Investigating Digital Citizenship Standards

CSTA K-12 Computer Science Standards

1A-IC-1 - Work respectfully and responsibly with others online.

ISTE Standards

1.1.a – Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes

1.1.b – Build networks and customize their learning environments in ways that support the learning process

1.1.c – Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

1.1.d – Understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies

1.2a – Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

1.2b – Students engage in positive, safe, legal and ethical behavior when using technology, including in social interactions online or when using networked devices.

1.2.c – Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

1.2.d – Students manage their personal data to maintain digital privacy and security, and are aware of data-collection technology used to track their navigation online.

1.3.a – Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

1.3.d – Build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions

1.6.a – Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication

1.6.b – Create original works or responsibly repurpose or remix digital resources into new creations

Common Core ELA

CCSS.ELA-LITERACY.SL.6.1.C – Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

CCSS.ELA-Literacy.SL.7.1 – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.7.1a – Come to discussions prepared, having read or researched the material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion

CCSS.ELA-LITERACY.L.7.1.A – Explain the function of phrases and clauses in general and their function in specific sentences.

CCSS.ELA-LITERACY.L.7.3 – Use knowledge of the language and its conventions when writing, speaking, reading, or listening.

CCSS.ELA-LITERACY.L.7.3.A – Choose a language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.
Investigating Digital Citizenship Standards

CCSS.ELA-LITERACY.W.7.1 – Write arguments to support claims with clear reasons and relevant evidence
  CCSS.ELA-LITERACY.W.7.1.a – Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically
  CCSS.ELA-LITERACY.W.7.1.b – Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text
  CCSS.ELA-LITERACY.W.7.1.c – Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence
  CCSS.ELA-LITERACY.W.7.1.d – Establish and maintain a formal style
  CCSS.ELA-LITERACY.W.7.1.e – Provide a concluding statement or section that follows from and supports the argument presented

CCSS.ELA-LITERACY.W.7.2 – Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
  CCSS.ELA-LITERACY.W.7.2.a – Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension
  CCSS.ELA-LITERACY.W.7.2.b – Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples
  CCSS.ELA-LITERACY.W.7.2.c – Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts
  CCSS.ELA-LITERACY.W.7.2.d – Use precise language and domain-specific vocabulary to inform about or explain the topic

CCSS.ELA-LITERACY.W.7.2.e – Establish and maintain a formal style
  CCSS.ELA-LITERACY.W.7.3 – Write narratives to develop real or imagined experiences or events using effective techniques, relevant descriptive details, and well-structured event sequences.
  CCSS.ELA-LITERACY.W.7.3.a – Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically
  CCSS.ELA-LITERACY.W.7.3.b – Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters
  CCSS.ELA-LITERACY.W.7.3.c – Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one-time frame or setting to another
  CCSS.ELA-LITERACY.W.7.3.d – Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events
  CCSS.ELA-LITERACY.W.7.3.e – Provide a conclusion that follows from and reflects on the narrated experiences or events

CCSS.ELA-LITERACY.W.7.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.
  CCSS.ELA-LITERACY.W.7.5 – With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
NGSS

**MS-PS2-2** – Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.

**MS-PS3-1** – 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.

**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.

**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.
Common Core Mathematics

CCSS.Math.Practice.MP2 - Reason abstractly and quantitatively.

CCSS.Math.Practice.MP4 - Model with mathematics.

CCSS.Math.Content.6.RP.A.1 - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”

CCSS.Math.Content.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. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.”

CCSS.Math.Content.6.EE.A.2 - Write, read, and evaluate expressions in which letters stand for numbers.

CCSS.Math.Content.7.RP.A.2 - Recognize and represent proportional relationships between quantities.

CCSS.Math.Content.7.EE.B.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.

CCSS.Math.Content.7.EE.B.4 - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

CCSS.Math.Content.8.EE.A.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $32 \times 3^{-5} = 3^{-3} = 1/33 = 1/27$.

CCSS.Math.Content.8.EE.A.2 - Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

CCSS.Math.Content.8.F.A.3 - Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
Motorized Toy Car Standards

Common Core ELA

**CCSS.ELA-Literacy.RST.6-8.1** – Cite specific textual evidence to support analysis of science and technical texts.

**CCSS.ELA-Literacy.RST.6-8.3** – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CCSS.ELA-Literacy.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).

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.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.

**CCSS.ELA-Literacy.WHST.6-8.8** – Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

**CCSS.ELA-Literacy.WHST.6-8.9** – Draw evidence from informational texts to support analysis, reflection, and research.

**CCSS.ELA-Literacy.SL.6.1** – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly. (Grade 7 standard: CCSS.ELA-Literacy.SL.7.1 Grade 8 standard: CCSS.ELA-Literacy.SL.8.1)
High School Challenges
Coming Soon

Grades 9-12