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Structure and Function: Exploring Design National and State Standards Alignment

Next Generation Science Standards

- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice - Asking Questions and Defining Problems -Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.
    - Ask questions based on observations to find more information about the natural and/or designed world(s).
    - Define a simple problem that can be solved through the development of a new or improved object or tool.
- Science and Engineering Practice - Developing and Using Models -Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
    - Develop a simple model based on evidence to represent a proposed object or tool.
- Science and Engineering Practice - Analyzing and Interpreting Data - Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

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    - Analyze data from tests of an object or tool to determine if it works as intended.
- Crosscutting Concept – Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s).

Common Core ELA

- RL.K.1 With prompting and support, ask and answer questions about key details in a text.
- RL.K.2 With prompting and support, retell familiar stories, including key details.
- RL.K.3 With prompting and support, identify characters, settings, and major events in a story.
- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- SL.K.1a Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
- SL.K.1b Continue a conversation through multiple exchanges.

Common Core Math

- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- 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.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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Pushes and Pulls National and State Standards Alignment

Next Generation Science Standards

- 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 a pull.
- PS2.A: Forces and Motion - Pushes and pulls can have different strengths and directions.
- PS2.A: Forces and Motion - Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- PS2.B: Types of Interactions - When objects touch or collide, they push on one another and can change motion.
- PS3.C: Relationship Between Energy and Forces - A bigger push or pull makes things speed up or slow down more quickly.
- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice - Asking Questions and Defining Problems -Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

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    - Ask questions based on observations to find more information about the natural and/or designed world(s).
    - Define a simple problem that can be solved through the development of a new or improved object or tool.
- Science and Engineering Practice - Developing and Using Models -Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
    - Develop a simple model based on evidence to represent a proposed object or tool.
- Science and Engineering Practice - Analyzing and Interpreting Data - Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
    - Analyze data from tests of an object or tool to determine if it works as intended.
- Crosscutting Concept – Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s).
- Crosscutting Concept – Cause and Effect - Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Common Core ELA

- W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
    - SL.K.1.A Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
    - SL.K.1.B Continue a conversation through multiple exchanges.
- SL.K.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- SL.K.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
- SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

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Common Core Math

- K.MD.A.1Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- 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.
- K.MD.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

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Structure and Function: Human Body National and State Standards Alignment

Next Generation Science Standards

- 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.
- 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.
- ETS1-3 Analyze data from tests of two objects design to solve the same problem to compare the strengths and weaknesses of how each performs.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.c: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Cross Cutting Concept – Structure and Function – The shape and stability of structures of natural and designed objects are related to their function(s).
- Cross Cutting Concept – Systems and System Models – Systems in the natural and designed world have parts that work together.
- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

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- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representation about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

Common Core English Language Arts

- RL.K.1 With prompting and support, ask and answer questions about key details in a text.
- RL.K.2 With prompting and support, retell familiar stories, including key details.
- RL.K.3 With prompting and support, identify characters, settings, and major events in a story.
- RL.K.10 Actively engage in group reading activities with purpose and understanding.
- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- SL.K.1a Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
- SL.K.1b Continue a conversation through multiple exchanges.

Common Core Mathematics

- K.CC.A.1 Count to 100 by ones and by tens.
- K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

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- K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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Animals and Algorithms National and State Standards Alignment

Computer Science Teachers Association K-12 CS Standards

- Collaboration 1:3-2: Work cooperatively and collaboratively with peers, teachers, and others using technology.
- Computational Thinking 1:3-1: Use technology resources (e.g., puzzles, logical thinking programs) to solve age-appropriate problems.
- Computational Thinking 1:3-2: Use writing tools, digital cameras, and drawing tools to illustrate thoughts, ideas, and stories in a step by step manner.
- Computational Thinking 1:3-4: Recognize that software is created to control computer operations.
- Computing Practice and Programming 1:3-4: Construct a set of statements to be acted out to accomplish a simple task.
- Computing Practice and Programming 1:3-3: Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.

Next Generation Science Standards

- 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.
- ETS1.A: Defining and Delimiting Engineering Problems
    - Asking questions, making observations, and gathering information are helpful in thinking about problems.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B: Developing Possible Solutions – Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas from a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

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- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.
- Science and Engineering Practice – Generate and/or compare multiple solutions to a problem.
- Science and Engineering Practice – With guidance, plan and conduct an investigation in collaboration with peers (for K).
- K-ESS3-1: Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

Common Core English Language Arts

- RL.K.3**:** With prompting and support, identify characters, settings, and major events in a story.
- W.K.3: Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.
- W.K.6: With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.
- SL.K.1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
    - SL.K.1.A: Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
    - SL.K.1.B: Continue a conversation through multiple exchanges.
- SL.K.5: Add drawings or other visual displays to descriptions as desired to provide additional detail.

Common Core Mathematics

- CONTENT.K.CC.A.2: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- CONTENT.K.G.A.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

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Light and Sound National and State Standards Alignment

Next Generation Science Standards

- 1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
- 1-PS4-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
- 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
- 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.
- PS4.A: Wave Properties – Sound can make matter vibrate, and vibrating matter can make sound.
- PS4.B: Electromagnetic Radiation – Objects can be seen if light is available to illuminate them or if they give off their own light.
- PS4.B: Electromagnetic Radiation – Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.
- PS4.C: Information Technologies and Instrumentation – People also use a variety of devices to communicate (send and receive information) over long distances.
- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

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- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.
- Crosscutting Concept - Cause and Effect – Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Common Core ELA

- 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.
- 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.

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    - SL.1.1a Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
    - SL.1.1b Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
    - SL.1.1c Ask questions to clear up any confusion about the topics and texts under discussion.
- SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
- SL.1.6 Produce complete sentences when appropriate to task and situation.

Common Core Math

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

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Light: Observing the Sun, Moon, and Stars National and State Standards Alignment

Next Generation Science Standards

- 1-PS4-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
- PS4.B: Electromagnetic Radiation – Objects can be seen if light is available to illuminate them or if they give off their own light.
- PS4.B: Electromagnetic Radiation – Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.
- 1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- 1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.
- ESS1.A: The Universe and its Stars – Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
- ESS1.B: Earth and the Solar System – Seasonal patterns of sunrise and sunset can be observed, described, and predicted.
- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

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- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.
- Crosscutting Concept – Cause and Effect - Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- Crosscutting Concept – Patterns - Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Common Core ELA

- 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.
- 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.

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    - SL.1.1a Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
    - SL.1.1b Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
    - SL.1.1c Ask questions to clear up any confusion about the topics and texts under discussion.
- SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
- SL.1.6 Produce complete sentences when appropriate to task and situation.

Common Core Math

- 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.
- 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.
- 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.
- 1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

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Animal Adaptations National and State Standards Alignment

Next Generation Science Standards

- 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.
- LS1.A Structure and Function. All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts that help them survive and grow.
- LS1.B D Information Processing. Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems
    - Asking questions, making observations, and gathering information are helpful in thinking about problems.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B Developing Possible Solutions – Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas from a problem's solutions to other people.
- ETS1.C Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Cross Cutting Concept - Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
    - Objects and organisms can be described in terms of their parts.
    - Systems in the natural and designed world have parts that work together.
- Cross Cutting Concept - Structure and Function – The way an object is shaped or structured determines many of its properties and functions.

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    - The shape and stability of structures of natural and designed objects are related to their function(s).

- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
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- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

Common Core English Language Arts

- RL.1.1 Ask and answer questions about key details in a text.
- RL.1.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- RL.1.3 Describe characters, settings, and major events in a story, using key details.
- RI.1.1 Ask and answer questions about key details in a text.

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- RI.1.2 Identify the main topic and retell key details of a text.
- RI.1.10 With prompting and support, read informational texts appropriately complex for grade 1.
- RF.1.4 Read with sufficient accuracy and fluency to support comprehension.
- W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- 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.
- SL.1.1.A Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- SL.1.1.B Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
- SL.1.1.C Ask questions to clear up any confusion about the topics and texts under discussion.
- SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
- SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
- SL.1.6 Produce complete sentences when appropriate to task and situation.
- L.1.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.
- L.1.5 With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.
- L.1.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., because).

Common Core Mathematics

- 1.NBT.A.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
- 1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
    - 1.NBT.B.2.A 10 can be thought of as a bundle of ten ones — called a "ten."
    - 1.NBT.B.2.B The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
    - 1.NBT.B.2.C The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

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- 1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
- 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.

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Animated Storytelling National and State Standards Alignment

Computer Science Teachers Association K-12 CS Standards

- Computers and Communication Devices 1:3-1: Use standard input and output devices to successfully operate computers and related technologies.
- Computational Thinking 1:3-4: Recognize that software is created to control computer operations.
- Computational Thinking 1:3-1: Use technology resources (e.g. puzzles, logical thinking programs) to solve age-appropriate problems.
- Computational Thinking 1:3-2: Use writing tools, digital cameras, and drawing tools to illustrate thoughts, ideas, and stories in a step by step manner
- Computing Practice and Programming 1:3-4: Construct a set of statements to be acted out to accomplish a simple task.
- Computing Practice and Programming 1:3-3: Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.
- Collaboration 1:3-2: Work cooperatively and collaboratively with peers, teachers, and others using technology.

Next Generation Science Standards

- 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.
- ETS1.A Defining and Delimiting Engineering Problems
    - Asking questions, making observations, and gathering information are helpful in thinking about problems.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B Developing Possible Solutions – Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas from a problem's solutions to other people.

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- ETS1.C Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).

Common Core English Language Arts

- RL.1.1 Ask and answer questions about key details in a text.
- RL.1.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- RL.1.3 Describe characters, settings, and major events in a story, using key details.
- W.1.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.
- W.1.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
- 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.
    - SL.1.1.A Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
    - SL.1.1.B Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
    - SL.1.1.C Ask questions to clear up any confusion about the topics and texts under discussion.
- SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
- SL.1.4 Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
- SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

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Common Core Mathematics

- 1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

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Materials Science: Properties of Matter
National and State Standards Alignment

Next Generation Science Standards

- 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 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-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
- PS1.A: Structure and Properties of Matter – Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
- PS1.A: Structure and Properties of Matter – Different properties are suited to different purposes.
- PS1.B: Chemical Reactions – Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)
- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to

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simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Crosscutting Concept – Patterns – Patterns in the natural world and human designed world can be observed.
- Cross Cutting Concept – Cause and Effect – Events have causes that generate observable patterns.
- Crosscutting Concept – Cause and Effect – Simple tests can be designed to gather evidence to support or refute student ideas about causes

Common Core English Language Arts

- 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.
- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
- RI.2.8 Describe how reasons support specific points the author makes in a text.
- 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).
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Common Core Mathematics

- 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.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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Materials Science: Form and Function
National and State Standards Alignment

Next Generation Science Standards

- 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 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.
- PS1.A: Structure and Properties of Matter – Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
- PS1.A: Structure and Properties of Matter – Different properties are suited to different purposes.
- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- LS2.A: Interdependent Relationships in Ecosystems - Plants depend on water and light to grow.
- LS2.A: Interdependent Relationships in Ecosystems - Plants depend on animals for pollination or to move their seeds around.
- 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.
- ETS1.A: Defining and Delimiting an Engineering Problem - Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C: Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

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- Crosscutting Concept - Cause and Effect - Events have causes that generate observable patterns.
- Crosscutting Concept – Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s).
- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

Common Core English Language Arts

- RI.2.1 Ask and answer such questions as who, what, where, when, why, and how in order to demonstrate understanding of key details in a text.
- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures found in a text.

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- RI.2.8 Describe how reasons support specific points the author makes in a text.
- 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 scientific observations).
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Common Core Mathematics

- 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.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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The Changing Earth
National and State Standards Alignment

Next Generation Science Standards

- 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-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
- 2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- PS1.A: Structure and Properties of Matter
    - Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1)
- ETS1.A Defining and Delimiting Engineering Problems
    - Asking questions, making observations, and gathering information are helpful in thinking about problems.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B Developing Possible Solutions – Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas from a problem's solutions to other people.
- ETS1.C Optimizing the Design Solution – Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Cross Cutting Concept - Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

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    - Objects and organisms can be described in terms of their parts.
    - Systems in the natural and designed world have parts that work together.
- Cross Cutting Concept - Structure and Function – The way an object is shaped or structured determines many of its properties and functions.
    - The shape and stability of structures of natural and designed objects are related to their function(s).
- Science and Engineering Practice – Asking Questions and Defining Problems – Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
- Science and Engineering Practice – Developing and Using Models – Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Science and Engineering Practice – Planning and Carrying Out Investigations – Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- Science and Engineering Practice – Analyzing and Interpreting Data – Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Science and Engineering Practice – Using Mathematics and Computational Thinking – Mathematical and computational thinking in K-2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
- Science and Engineering Practice – Constructing Explanations and Designing Solutions – Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Science and Engineering Practice – Engaging in Argument from Evidence – Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
- Science and Engineering Practice – Obtaining, Evaluating, and Communicating Information – Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information.

Common Core ELA

- 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.

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- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
- RI.2.9 Compare and contrast the most important points presented by two texts on the same topic.
- 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.
- 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).
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question.
- SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
- SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Common Core Math

- MP.2 Reason abstractly and quantitatively
- MP.4 Model with mathematics
- MP.5 Use appropriate tools strategically.
- 2.NBT.A Understand place value.
- 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.
    - 2.NBT.A.1.B
      The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
- 2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
- 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.

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Grids and Games National and State Standards Alignment

Computer Science Teachers Association K–12 CS Standards

- Collaboration 1:3–2. Work cooperatively and collaboratively with peers, teachers, and others using technology.
- Computational Thinking 1:3–1. Use technology resources (e.g., puzzles, logical thinking programs) to solve age-appropriate problems.
- Computational Thinking 1:3–2. Use writing tools, digital cameras, and drawing tools to illustrate thoughts, ideas, and stories in a step-by-step manner.
- Computing Practice and Programming 1:3–3 Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.
- Computational Thinking 1:3–4. Recognize that software is created to control computer operations.
- Computing Practice and Programming 1:3–4. Construct a set of statements to be acted out to accomplish a simple task.
- Computing Practice and Programming 1:3–5 Careers: Identify jobs that use computing and technology.
- Computers and Communication Devices—1A.1 Computers: Use standard input and output devices to successfully operate computers and related technologies.

Next Generation Science Standards

- ETS1.A Defining and Delimiting Engineering Problems
    - Asking questions, making observations, and gathering information are helpful in thinking about problems.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B Developing Possible Solutions—Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas from a problem's solutions to other people.
- ETS1.C Optimizing the Design Solution—Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
- Science and Engineering Practice—Asking Questions and Defining Problems—Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.

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- Science and Engineering Practice—Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.
- Science and Engineering Practice—Generate and/or compare multiple solutions to a problem.
- Science and Engineering Practice—With guidance, plan and conduct an investigation in collaboration with peers (for K).

Common Core ELA

- 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.
- SL.2.1.A 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).
- SL.2.1.B Build on others' talk in conversations by linking their comments to the remarks of others.
- SL.2.1.C Ask for clarification and further explanation as needed about the topics and texts under discussion.

Common Core Math

- 2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.C.3 Work with equal groups of objects to gain foundations for multiplication.
- 2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- 2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- 2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- 2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

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Stability and Motion: Science of Flight
National and State Standards Alignment

Next Generation Science Standards

- 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.
- PS2.A: Forces and Motion - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.
- PS2.A: Forces and Motion - The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.
- PS2.B: Types of Interactions - Objects in contact exert forces on each other.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - People's needs and wants change over time, as do their demands for new and improved technologies.

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- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
- Crosscutting Concept – Patterns - Patterns of change can be used to make predictions.
- Crosscutting Concept – Cause and Effect - Cause and effect relationships are routinely identified.
- Crosscutting Concept – Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.

Common Core ELA

- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- 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.
- 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).
- W.3.7 Conduct short research projects that build knowledge about a topic.
- 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.
- SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Common Core Math

- MP.2 Reason abstractly and quantitatively.
- MP.5 Use appropriate tools strategically.
- 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.

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Stability and Motion: Forces and Interactions National and State Standards Alignment

Next Generation Science Standards

- 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 that a pattern can be used to predict future motion.
- 3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- 3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.
- PS2.A: Forces and Motion - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.
- PS2.A: Forces and Motion - The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.
- PS2.B: Types of Interactions - Objects in contact exert forces on each other.
- PS2.B: Types of Interactions - Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be

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compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.

- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - People's needs and wants change over time, as do their demands for new and improved technologies.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
- Crosscutting Concept – Patterns - Patterns of change can be used to make predictions.
- Crosscutting Concept – Cause and Effect - Cause and effect relationships are routinely identified.
- Crosscutting Concept – Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.

Common Core ELA

- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- 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.
- 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).
- W.3.7 Conduct short research projects that build knowledge about a topic.
- 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.
- SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Common Core Math

- MP.2 Reason abstractly and quantitatively.
- MP.5 Use appropriate tools strategically.

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- 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
- 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.

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Variation of Traits National and State Standards Alignment

Next Generation Science Standards

- 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.
- LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.
- LS3.A Inheritance of Traits – Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
- LS3.B Variation of Traits – Different organisms vary in how they look and function because they have different inherited information. The environment also affects the traits that an organism develops.
- ETS1-1 Define a simple problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 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.
- Science and Engineering Practices – Asking Questions and Defining Problems – Asking questions and Builds on K-2 experiences and progresses to specifying qualitative relationships.
- Science and Engineering Practices – Developing and Using Models – Builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Science and Engineering Practices – Planning and Carrying out Investigations - Builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
- Science and Engineering Practices – Analyzing and Interpreting Data – Builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.

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- Science and Engineering Practices – Constructing Explanations and Designing Solutions – Builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Science and Engineering Practices – Obtaining, Evaluating, and Communicating Information – Builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
- Crosscutting Concept – Patterns – Patterns can be used as evidence to support an explanation.
- Crosscutting Concept – Cause and Effect – Cause and effect relationships are routinely identified, tested, and used to explain change.

Common Core English Language Arts

- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
- W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
    - W.3.2.B Develop the topic with facts, definitions, and details.
    - W.3.2.D Provide a concluding statement or section.
- 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.
- 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 orally.
- SL.3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Common Core Mathematics

- 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.
- MP.2 Reason abstractly and quantitatively.
- MP.5 Use appropriate tools strategically.

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Programming Patterns
National and State Standards Alignment

Computer Science Teachers Association K–12 Standards

- L1:6.CT.1. Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
- L1:6.CT.2. Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
- L1:6.CT.5. Make a list of subproblems to consider while addressing a larger problem.
- L1:6.CL.1. Use productivity technology tools (e.g., word processing, spreadsheet, presentation software) for individual and collaborative writing, communication, and publishing activities.
- L1:6.CL.2. Use online resources (e.g., e-mail, online discussions, collaborative web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products.
- L1:6.CL.3. Identify ways that teamwork and collaboration can support problem solving and innovation.
- L1:3.CPP.2. Use developmentally appropriate multimedia resources (e.g., interactive books and educational software) to support learning across the curriculum.
- L1:6.CPP.5. Construct a program as a set of step-by-step instructions to be acted out.
- L1:6.CPP.6. Implement problem solutions using a block-based visual programming language.
- L1:6.CD.1. Demonstrate an appropriate level of proficiency with keyboards and other input and output devices.
- L1:6.CD.2. Understand the pervasiveness of computers and computing in daily life (e.g., voice mail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
- L1:6.CD.3. Apply strategies for identifying simple hardware and software problems that may occur during use.

Common Core ELA Standards

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- CCSS.ELA-LITERACY.L.3.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- CCSS.ELA-LITERACY.L.3.1.A Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.
- CCSS.ELA-Literacy.3.RI.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.3.SL.1 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).

Common Core Math Standards

- CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them.
- CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.
- CCSS.Math.Practice.MP5 Reason abstractly and quantitatively.
- CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning.

Next Generation Science Standards

- 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.
- ETS1.A Defining and Delimiting Engineering Problems—Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions—Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Crosscutting Concept: Influence of Science, Engineering, and Technology on Society and the Natural World—People's needs and wants change over time, as do their demands for new and improved technologies.
- Crosscutting Concept: Influence of Science, Engineering, and Technology on Society and the Natural World—Engineers improve existing technologies or

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develop new ones to increase their benefits, decrease known risks, and meet societal demands.

- Crosscutting Concept: Cause and Effect—Cause and effect relationships are routinely identified.
- Crosscutting Concept: Cause and Effect—Cause and effect relationships are routinely identified, tested, and used to explain change.

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Energy: Collisions National and State Standards Alignment

Next Generation Science Standards

- 4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.
- 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.
- PS2.A: Forces and Motion - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.
  The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.
- PS2.B: Types of Interactions - Objects in contact exert forces on each other.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Science and Engineering Practices – Asking Questions and Defining Problems – Asking questions and Builds on K-2 experiences and progresses to specifying qualitative relationships.

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- Science and Engineering Practices – Developing and Using Models – Builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Science and Engineering Practices – Planning and Carrying Out Investigations – Builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
- Science and Engineering Practices – Analyzing and Interpreting Data – Builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
- Science and Engineering Practices – Constructing Explanations and Designing Solutions – Builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Science and Engineering Practices – Obtaining, Evaluating, and Communicating Information – Builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
- Crosscutting Concept – Scale, Proportion, and Quantity – Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long periods of time. Standards units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
- Crosscutting Concept – Systems and System Models – A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.
- Crosscutting Concept – Systems and System Models – A system can be described in terms of its components and their interactions.
- Crosscutting Concept – Energy and Matter – Energy can be transferred in various ways and between objects.
- Crosscutting Concept – Structure and Function – Different materials have substructures, which can sometimes be observed.
- Crosscutting Concept – Structure and Function – Substructures have shapes and parts that serve functions.
- Crosscutting Concept - Patterns – Patterns of change can be used to make predictions.

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- Crosscutting Concept - Cause and Effect – Cause and effect relationships are routinely identified, tested, and used to explain change.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - People's needs and wants change over time, as do their demands for new and improved technologies.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

Common Core ELA

- 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.
- 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.
- RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- 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.
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Common Core Math

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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Energy: Conversion National and State Standards Alignment

Next Generation Science Standards

- 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-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- PS2.A: Forces and Motion – Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.
- PS2.A: Forces and Motion – The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.
- PS2.B: Types of Interactions – Objects in contact exert forces on each other.
- PS2.B: Types of Interactions – Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage,

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communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

- Science and Engineering Practices – Asking Questions and Defining Problems – Asking questions and Builds on K-2 experiences and progresses to specifying qualitative relationships.
- Science and Engineering Practices – Developing and Using Models – Builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Science and Engineering Practices – Planning and Carrying Out Investigations – Builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
- Science and Engineering Practices – Analyzing and Interpreting Data – Builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
- Science and Engineering Practices – Constructing Explanations and Designing Solutions – Builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Science and Engineering Practices – Obtaining, Evaluating, and Communicating Information – Builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
- Crosscutting Concept – Patterns – Patterns can be used as evidence to support an explanation.
- Crosscutting Concept – Cause and Effect – Case and effect relationships are routinely identified, tested, and used to explain change.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - People’s needs and wants change over time, as do their demands for new and improved technologies.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

Common Core ELA

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- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- 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.
- 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).
- W.3.7 Conduct short research projects that build knowledge about a topic.
- 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.
- SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Common Core Math

- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

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Input/Output: Computer Systems
National and State Standards Alignment

Computer Science Teachers Association K–12 Standards

- L1:6.CT.1. Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
- L1:6.CT.2. Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
- L1:6.CT.5. Make a list of subproblems to consider while addressing a larger problem.
- L1:6.CL.1. Use productivity technology tools (e.g., word processing, spreadsheet, presentation software) for individual and collaborative writing, communication, and publishing activities.
- L1:6.CL.3. Identify ways that teamwork and collaboration can support problem solving and innovation.
- L1:3.CPP.2. Use developmentally appropriate multimedia resources (e.g., interactive books and educational software) to support learning across the curriculum.
- L1:6.CPP.5. Construct a program as a set of step-by-step instructions to be acted out.
- L1:6.CPP.6. Implement problem solutions using a block-based visual programming language.
- L1:6.CD.1. Demonstrate an appropriate level of proficiency with keyboards and other input and output devices.
- L1:6.CD.2. Understand the pervasiveness of computers and computing in daily life (e.g., voice mail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
- L1:6.CD.3. Apply strategies for identifying simple hardware and software problems that may occur during use.
- L1:6.CT.3: Demonstrate how a string of bits can be used to represent alphanumeric information.
- L1:6.CT.6: Understand the connection between computer science and other fields.
- L1:6.CPP.4: Gather and manipulate data using a variety of digital tools.
- L1:6.CD.4: Identify that information is coming to the computer from many sources over the network.
- L1:6.CD.6: Recognize that computers model intelligent behavior.
- L1:6.CGE.1: Discuss basic issues related to responsible use of technology and information, and the consequences of inappropriate use.

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Next Generation Science Standards

- 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.
- ETS1.A Defining and Delimiting Engineering Problems—Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions—Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- ETS1.C Optimizing the Design Solution—Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

Common Core ELA

- CCSS.ELA-LITERACY.L.3.1
  Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- CCSS.ELA-Literacy.3.RI.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.3.SL.1
  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).

Common Core Math

- CCSS.Math.Practice.MP1
  Make sense of problems and persevere in solving them.
- CCSS.Math.Practice.MP2
  Reason abstractly and quantitatively.
- CCSS.Math.Practice.MP4
  Model with Mathematics.
- CCSS.Math.Practice.MP5
  Use appropriate tools strategically.

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Input/Output: Human Brain National and State Standards Alignment

Next Generation Science Standards

- 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- LS1.A Structure and Function – Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
- LS1.D Information Processing – Different sense receptors are specialized for particular kinds of information, which may then be processed by an animal's brain. Animals are able to use their perceptions and memories to guide their actions.
- ETS1-1 Define a simple problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
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- Science and Engineering Practices – Developing and Using Models – Builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

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- Science and Engineering Practices – Planning and Carrying Out Investigations – Builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
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- Crosscutting Concept – Energy and Matter – Energy can be transferred in various ways and between objects.
- Crosscutting Concept – Structure and Function – Different materials have substructures, which can sometimes be observed.
- Crosscutting Concept – Structure and Function – Substructures have shapes and parts that serve functions.

Common Core English Language Arts

- RL.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.4.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.

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- RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- W.4.2.D Use precise language and domain-specific vocabulary to inform about or explain the topic.
- W.4.2.E Provide a concluding statement or section related to the information or explanation presented.
- W.4.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.
- W.4.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- 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.
- 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.
- 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.

Common Core Mathematics

- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
- 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- 3-5.OA Operations and Algebraic Thinking

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Robotics and Automation National and State Standards Alignment

Next Generation Science Standards

- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- ESS3.C: Human Impacts on Earth Systems - Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.
- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
- Science and Engineering Practices – Constructing Explanations and Designing Solutions – Builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Crosscutting Concept – Cause and Effect – Case and effect relationships are routinely identified, tested, and used to explain change.

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- Crosscutting Concept – Systems and System Models – A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.
- Crosscutting Concept – Systems and System Models – A system can be described in terms of its components and their interactions.
- Crosscutting Concept – Structure and Function – Different materials have substructures, which can sometimes be observed.
- Crosscutting Concept – Structure and Function – Substructures have shapes and parts that serve functions.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - People's needs and wants change over time, as do their demands for new and improved technologies.
- Crosscutting Concept – Influence of Science, Engineering, and Technology on Society and the Natural World - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

Common Core ELA

- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
- W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
- 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.
- W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Common Core Math

- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- 3-5.OA Operations and Algebraic Thinking

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Robotics and Automation: Challenge
National and State Standards Alignment

Next Generation Science Standards

- 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.
- ETS1.A Defining and Delimiting Engineering Problems – Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into accounts.
- ETS1.B Developing Possible Solutions – Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
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- Crosscutting Concept – Structure and Function – Different materials have substructures, which can sometimes be observed.
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Common Core ELA

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- RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
- W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
- 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.
- W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Common Core Math

- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- 5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).
- 5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using

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an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

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Infection: Detection National and State Standards Alignment

Next Generation Science Standards

- LS2.A: Interdependent Relationships in Ecosystems. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or their parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.
- ETS1-1 Define a simple problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 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.
- ETS1.A: Defining and Delimiting Engineering Problems. Possible solutions to a problem are limited by available materials and resources (constraints).
- ETS1.B Developing Possible Solutions –
    - Research on a problem should be carried out before beginning to design a solution.
    - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.
- Science and Engineering Practices – Asking Questions and Defining Problems – Asking questions and Builds on K-2 experiences and progresses to specifying qualitative relationships.
- Science and Engineering Practices – Developing and Using Models – Builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Science and Engineering Practices – Planning and Carrying Out Investigations – Builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
- Science and Engineering Practices – Analyzing and Interpreting Data – Builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.

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- Science and Engineering Practices – Using Mathematics and Computational Thinking – Builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
- Science and Engineering Practices – Constructing Explanations and Designing Solutions – Builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Science and Engineering Practices – Obtaining, Evaluating, and Communicating Information – Builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
- Crosscutting Concept – Patterns –
    - Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena and design products.
    - Patterns of change can be used to make predictions.
    - Patterns can be used as evidence to support an explanation.
- Crosscutting Concept – Cause and Effect – Case and effect relationships are routinely identified, tested, and used to explain change.
- Crosscutting Concept – Scale, Proportion, and Quantity – Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long periods of time. Standards units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
- Crosscutting Concept – Systems and System Models – A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.
- Crosscutting Concept – Systems and System Models – A system can be described in terms of its components and their interactions.
- Crosscutting Concept – Structure and Function – Different materials have substructures, which can sometimes be observed.
- Crosscutting Concept – Structure and Function – Substructures have shapes and parts that serve functions.

Common Core English Language Arts

- RI.5.2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
- 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.
- RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

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- RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
- RI.5.10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.
- RF.5.4 Read with sufficient accuracy and fluency to support comprehension.
- W.5.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- W.5.4 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.)
- W.5.6 With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.
- W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
- 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.
- L.5.3 Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- L.5.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
- L.5.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

Common Core Mathematics

- 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of

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the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

- 5.NBT.A.3 Read, write, and compare decimals to thousandths.

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Infection: Modeling and Simulation
National and State Standards Alignment

Computer Science Teachers Association

- CT-1B.4 Modeling and Simulation: Describe how a simulation can be used to solve a problem.
- CD-1B.5 Humans vs. Computers: Identify factors that distinguish humans from machines.
- CD-1B.6 Humans vs. Computers: Recognize that computers model intelligent behavior.
- CPP-1B.5 Careers: Identify a wide range of jobs that require knowledge of or use of computing.
- CT-1B.6 Connections to other fields: Understand the connections between computer science and other fields.
- CL-1B.3 Computing as a collaborative endeavor: Identify ways that teamwork and collaboration can support problem solving and innovation.
- CI-1B.2 Impacts of Technology: Identify the impact of technology (e.g., social networking, cyberbullying, mobile and web technologies, cybersecurity, and virtualization) on personal life and society.
- CD-1B.1 Computers: Demonstrate an appropriate level of proficiency with keyboards and other input and output devices.
- CPP-1A.6 Data Collection and Analysis: Gather and organize information using concept mapping tools.
- CT-1B.5 Abstraction: Make a list of subproblems to consider while addressing a larger problem.
- CT-1B.1 Problem Solving: Understand and use the basic steps in algorithmic problem solving.
- CPP-1B.10 Data Collection and Analysis: Gather and manipulate data using a variety of digital tools.
- CT-1B.2 Algorithms: Develop a simple understanding of an algorithm using computer-free exercises.
- CPP-1B.5 Programming: Construct a program as a set of step-by-step instructions to be acted out.
- CPP-1B.6 Programming: Implement problem solutions using a block-based visual programming language.
- CD-1B.4 Computers: Understand the pervasiveness of computers and computing in daily life.
- CD-1B.3 Troubleshooting: Apply strategies for identifying simple hardware and software problems that may occur during use.
- CD-1B.1 Computers: Demonstrate an appropriate level of proficiency with keyboards and other input and output devices.

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- CT-3:6.4 Modeling and Simulation: Describe how a simulation can be used to solve a problem.
- CD-3:6.6 Humans vs. Computers: Recognize that computers model intelligent behavior.
- CD-3:6.5 Humans vs. Computers: Identify factors that distinguish humans from machines.
- CL-3:6.3 Computing as a collaborative endeavor: Identify ways that teamwork and collaboration can support problem solving and innovation.
- CPP-3:6.5 Careers: Identify a wide range of jobs that require knowledge of or use of computing.
- CT-3:6.6 Connections to other fields: Understand the connections between computer science and other fields.
- CT-3:6.1 Problem Solving: Understand and use the basic steps in algorithmic problem solving.
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- CPP-3:6.10 Data Collection and Analysis: Gather and manipulate data using a variety of digital tools.
- CT-3:6.2 Algorithms: Develop a simple understanding of an algorithm using computer-free exercises.
- CPP-3:6.5 Programming: Construct a program as a set of step-by-step instructions to be acted out.
- CPP-3:6.6 Programming: Implement problem solutions using a block-based visual programming language.
- CD-3:6.4 Computers: Understand the pervasiveness of computers and computing in daily life.
- CT-3A.1 Problem Solving: Use predefined functions and parameters, classes and methods to divide a complex problem into simpler parts.
  CT-2.8 Modeling and Simulation: Use modeling and simulation to represent and understand natural phenomena.
- CT-2.9 Modeling and Simulation: Interact with content-specific models and simulations to support learning and research.
- CPP-2.9 Data Collection and Analysis: Collect and analyze data that is output from multiple runs of a computer program.

Common Core Math

- CCSS.Math.5.G.1

  Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention

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that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

- CCSS.Math.5.G.2

  Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Next Generation Science Standards

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