	Common Core State Standards (ELA)	Common Core State Standards (Math)	Next Generation Science Standards (NGSS)	K-12 Computer Science Framework[1]	21st Century Competencies
Getting Started ● BlocklyProp - client ● EEPROM	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 ● Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 ● Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.4.6 ● Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.4.9		4-PS4 Waves and their Applications in Technologies for Information Transfer ● 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.	*Practices* P1.Fostering and Inclusive Computing Culture.1 *Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.* P1.Fostering and Inclusive Computing Culture.2 *Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.* P4.Developing and Using Abstractions.2 *Evaluate existing technological functionalities and incorporate them into new designs.* P5.Creating Computational Artifacts.2 *Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify an existing artifact to improve or customize it.* P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* P7.Communicating About Computing.2 *Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.*	● Self-directed ● Innovative ● Revision ● Design-Thinking ● Use technology

	● Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.4.10 ● By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation).. CCSS. ELA.Content.RI.5.1 ● Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 ● Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 ● Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.5.5			*Concepts* 6-8.Computing Systems.Hardware and Software *Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple tradeoffs, such as functionality, cost, size, speed, accessibility, and aesthetics.* 6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Networks and the Internet.Network Communication and Organization *Computers send and receive information based on a set of rules called protocols. Protocols define how messages between computers are structured and sent. Considerations of security, speed, and reliability are used to determine the best path to send and receive data.* 6-8.Data and Analysis.Storage *Applications store data as a representation. Representations occur at multiple levels, from the arrangement of information into organized formats (such as tables in software) to the physical storage of bits. The software tools used to access information translate the low-level representation of bits into a form understandable by people.* 6-8.Algorithms and Programming.Modularity *Programs use procedures to organize code, hide implementation details, and make code easier to reuse. Procedures can be repurposed in new programs.*	

	• Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts. CCSS. ELA.Content.RI.5.6 • Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.5.9 • Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 • Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*). CCSS. ELA.Content.RI.6.1 • Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS. ELA.Content.RI.6.2			*Defining parameters for procedures can generalize behavior and increase reusability.*	

	● Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS. ELA.Content.RI.6.3 ● Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). CCSS. ELA.Content.RI.6.4 ● Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS. ELA.Content.RI.6.5 ● Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS. ELA.Content.RI.6.6 ● Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.RI.6.7 ● Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. CCSS. ELA.Content.L.6.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.				
Lights and Sounds ● LEDs ● Sounds	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says	CCSS. Math.Content.OA.4.1 ● Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7	4-PS3 Energy ● 4-PS3-2. Make observations to provide evidence that energy can be transferred	*Practices* P4.Developing and Using Abstractions.4	● Self-directed ● Innovative ● Critical-thinking ● Reflection

• Loops • GUI • Variables	explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 • Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 • Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.4.6 • Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.4.9 • Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.4.10 • By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band	and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. CCSS. Math.Content.OA.4.2 • Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. CCSS. Math.Content.OA.4.3 • 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. CCSS. Math.Content.OA.4.5 • Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way*. CCSS. Math.Content.NBT.4.5 • Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and	from place to place by sound, light heat, and electric current. • 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. 4-PS4 Waves and their Applications in Technologies for Information Transfer • 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information. MS-PS4 Waves and their Applications in Technologies for Information Transfer • MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. • MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. 3-5-ETS1 Engineering Design • 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	*Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.* P5.Creating Computational Artifacts.1 *Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.* P5.Creating Computational Artifacts.2 *Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify and existing artifact to improve or customize it..* P6.Testing and Refining Computational Artifacts.1 *Systematically test computational artifacts by considering all scenarios and using test cases.* P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* *Concepts* 6-8.Computing Systems.Devices *The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can improve the design of devices and extend the abilities of humans.* 6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing*	• Revision • Design-thinking • Use technology

	proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation). CCSS. ELA.Content.W.4.7 ● Conduct short research projects that build knowledge through investigation of different aspects of a topic. CCSS. ELA.Content.W.4.9 ● Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.SL.4.2 ● Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. CCSS. ELA.Content.SL.4.3 ● Identify the reasons and evidence a speaker provides to support particular points. CCSS. ELA.Content.RI.5.1 ● Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 ● Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 ● Explain the relationships or interactions between two or more individuals, events,	explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.4.6 ● Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.MD.4.1 ● 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. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* CCSS. Math.Content.MD. 4.2 ● 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. CCSS. Math.Content.MD.4.4 ● Make a line plot to display a data set of measurements in fractions of a unit (1/2,	failure points are considered to identify aspects of a model or prototype that can be improved. MS-ETS1 Engineering Design ● MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. ● MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. ● MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Algorithms and Programming.Variables *Programmers create variables to store data values of selected types. A meaningful identifier is assigned to each variable to access and perform operations on the value by name. Variables enable the flexibility to represent different situations, process different sets of data, and produce varying outputs.* 6-8.Algorithms and Programming.Control *Programmers select and combine control structures, such as loops, event handlers, and conditionals, to create more complex program behavior.* 6-8.Impacts of Computing.Culture *Advancements in computing technology change people's everyday activities. Society is faced with trade-offs due to the increasing globalization and automation that computing brings.*	

	ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.5.5 ● Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts. CCSS. ELA.Content.RI.5.6 ● Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.5.9 ● Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast,	1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*. CCSS. Math.Content.NF.4.1 ● Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. CCSS. Math.Content.NF.4.2 ● Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. CCSS. Math.Content.NF.4.3 ● Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. CCSS. Math.Content.NF.4.4 ● Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. CCSS. Math.Content.NF.4.5 ● Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10			

	addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*). CCSS. ELA.Content.W.5.7 ● Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. CCSS. ELA.Content.W.5.9 ● Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.SL.5.2 ● Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. CCSS. ELA.Content.SL.5.3 ● Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence. CCSS.ELA.Content.RI.6.1 ● Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS.ELA.Content.RI.6.2 ● Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS.ELA.Content.RI.6.3 ● Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). CCSS.ELA.Content.RI.6.4 ● Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS.ELA.Content.RI.6.5	and 100.2*For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100*. CCSS. Math.Content.NF.4.6 ● Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*. CCSS. Math.Content.NF.4.7 ● Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. CCSS. Math.Content.OA.5.1 ● Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. CCSS. Math.Content.OA.5.2 ● Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*. CCSS. Math.Content.OA.5.3 ● Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate*			

	● Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS.ELA.Content.RI.6.6 ● Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.L.6.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. CCSS.ELA.Content.W.6.7 ● Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate. CCSS.ELA.Content.W.6.9 ● Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.SL.6.2 ● Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study. CCSS. ELA.Content.SL.6.3 ● Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	*terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* CCSS. Math.Content.NBT.5.1 ● 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. CCSS. Math.Content.NBT.5.2 ● 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 the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. CCSS. Math.Content.NBT.5.3 ● Read, write, and compare decimals to thousandths. CCSS. Math.Content.NBT.5.6 ● Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.5.7 ● Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.			

		CCSS. Math.Content.MD.5.1 ● 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. CCSS. Math.Content.MD.5.2 ● Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*. CCSS. Math.Content.NF.5.1 ● Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)* CCSS. Math.Content.NF.5.2 ● Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*. CCSS. Math.Content.NS.6.2			

		• Fluently divide multi-digit numbers using the standard algorithm. CCSS. Math.Content.NS.6.3 • Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. CCSS. Math.Content.NS.6.6 • Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. CCSS. Math.Content.NS.6.8 • Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. CCSS. Math.Content.EE.6.2 • Write, read, and evaluate expressions in which letters stand for numbers. CCSS. Math.Content.EE.6.3 • Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*. CCSS. Math.Content.EE.6.4 • Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For*			

		example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for. CCSS. Math.Content.EE.6.5 ● Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. CCSS. Math.Content.EE.6.6 ● Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. CCSS. Math.Content.EE.6.7 ● Solve real-world and mathematical problems by writing and solving equations of the form *x* + *p* = *q* and *px* = *q* for cases in which *p*, *q* and *x* are all nonnegative rational numbers. CCSS. Math.Content.EE.6.8 ● Solve real-world and mathematical problems by writing and solving equations of the form *x* + *p* = *q* and *px* = *q* for cases in which *p*, *q* and *x* are all nonnegative rational numbers. CCSS. Math.Content.EE.6.9 ● Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the			

		relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. CCSS. Math.Content.SP.6.1 ● Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*. CCSS. Math.Content.SP.6.2 ● Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. CCSS. Math.Content.SP.6.3 ● Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. CCSS. Math.Content.SP.6.4 ● Display numerical data in plots on a number line, including dot plots, histograms, and box plots. CCSS. Math.Content.SP.6.5 ● Summarize numerical data sets in relation to their context, such as by... CCSS. Math.Content.RP.6.1 ● Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the*			

		bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes." CCSS. Math.Content.RP.6.2 ● Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* CCSS. Math.Content.RP.6.3 ● Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.			

Simple Motion ● Drive and Rotate ● Speed Control ● Draw Shapes	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 ● Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 ● Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.4.6 ● Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.4.9 ● Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.4.10 ● By the end of year, read and comprehend informational texts, including history/social	CCSS. Math.Content.OA.4.1 ● Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. CCSS. Math.Content.OA.4.2 ● Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. CCSS. Math.Content.OA.4.3 ● 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. CCSS. Math.Content.NBT.4.1 ● Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*. CCSS. Math.Content.NBT.4.3 ● Use place value understanding to round multi-digit whole numbers to any place. CCSS. Math.Content.NBT.4.5 ● Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using	MS-PS2 Motion and Stability: Forces and Interactions ● MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. 4-PS3 Energy ● 4-PS3-3. Ask questions and predicts outcomes about the changes in energy that occur when objects collide. MS-PS3 Energy ● MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. 3-5-ETS1 Engineering Design ● 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. ● 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. ● 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. MS-ETS1 Engineering Design ● MS-ETS1-2. Evaluate competing design solutions using a systematic process to	*Practices* P3.Recognizing and Defining Computational Problems.1 *Identify complex, interdisciplinary, real-world problems that can be solved computationally.* P3.Recognizing and Defining Computational Problems.2 *Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.* P3.Recognizing and Defining Computational Problems.3 *Evaluate whether it is appropriate and feasible to solve a problem computationally.* P4.Developing and Using Abstractions.1 *Extract common features from a set of interrelated processes or complex phenomena.* P4.Developing and Using Abstractions.2 *Evaluate existing technological functionalities and incorporate them into new designs.* P5.Creating Computational Artifacts.1 *Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.* P5.Creating Computational Artifacts.2 *Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify an existing artifact to improve or customize it.* P6.Testing and Refining Computational Artifacts.1 *Systematically test computational artifacts by considering all scenarios and using test cases.*	● Self-directed ● Innovative ● Critical-thinking ● Reflection ● Revision ● Design-thinking ● Use technology

	studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.4 ● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.4.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation). CCSS. ELA.Content.W.4.8 ● Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. CCSS. ELA.Content.W.4.9 ● Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.W.4.10 ● Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CCSS. ELA.Content.RI.5.1	strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.4.6 ● Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.MD.4.1 ● 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. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* CCSS. Math.Content.MD. 4.2 ● 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. CCSS. Math.Content.MD.4.5	determine how well they meet the criteria and constraints of the problem. ● MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. ● MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* *Concepts* 6-8.Computing Systems.Devices *The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can improve the design of devices and extend the abilities of humans.* 6-8.Computing Systems.Hardware and Software *Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple tradeoffs, such as functionality, cost, size, speed, accessibility, and aesthetics.* 6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Algorithms and Programming.Control *Programmers select and combine control structures, such as loops, event handlers, and conditionals, to create more complex program behavior.*	

	● Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 ● Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 ● Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.5.5 ● Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts. CCSS. ELA.Content.RI.5.6 ● Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.5.9 ● Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.5.10	● Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. CCSS. Math.Content.MD.4.6 ● Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. CCSS. Math.Content.MD.4.7 ● Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. CCSS. Math.Content.NF.4.4 ● Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. CCSS. Math.Content.NF.4.6 ● Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*. CCSS. Math.Content.NF.4.7 ● Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. CCSS. Math.Content.G.4.1 ● Draw points, lines, line segments, rays, angles (right, acute, obtuse), and			

	● 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. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*). CCSS. ELA.Content.W.5.8 ● Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. CCSS. ELA.Content.W.5.9 ● Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.W.5.10 ● Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CCSS. ELA.Content.RI.6.1	perpendicular and parallel lines. Identify these in two-dimensional figures. CCSS. Math.Content.OA.5.2 ● Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*. CCSS. Math.Content.NBT.5.1 ● 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. CCSS. Math.Content.NBT.5.2 ● 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 the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. CCSS. Math.Content.NBT.5.3 ● Read, write, and compare decimals to thousandths. CCSS. Math.Content.NBT.5.4 ● Use place value understanding to round decimals to any place. CCSS. Math.Content.NBT.5.5 ● Fluently multiply multi-digit whole numbers using the standard algorithm. CCSS. Math.Content.NBT.5.6 ● Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of			

	• Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS. ELA.Content.RI.6.2 • Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS. ELA.Content.RI.6.3 • Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). CCSS. ELA.Content.RI.6.4 • Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS. ELA.Content.RI.6.5 • Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS. ELA.Content.RI.6.6 • Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.RI.6.7 • Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. CCSS. ELA.Content.RI.6.8 • Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. CCSS. ELA.Content.L.6.4	operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.5.7 • Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. CCSS. Math.Content.MD.5.1 • 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. CCSS. Math.Content.MD.5.2 • Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*. CCSS. Math.Content.NS.6.2 • Fluently divide multi-digit numbers using the standard algorithm. CCSS. Math.Content.NS.6.3 • Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. CCSS. Math.Content.NS.6.5 • Understand that positive and negative numbers are used together to describe			

	• Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.6.6 • Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. CCSS.ELA.Content.W.6.7 • Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate. CCSS.ELA.Content.W.6.8 • Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources. CCSS. ELA.Content.W.6.9 • Draw evidence from literary or informational texts to support analysis, reflection, and research. CCSS. ELA.Content.W.6.10 • Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. CCSS. Math.Content.NS.6.6 • Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. CCSS. Math.Content.NS.6.7 • Understand ordering and absolute value of rational numbers. CCSS. Math.Content.NS.6.8 • Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. CCSS. Math.Content.EE.6.2 • Write, read, and evaluate expressions in which letters stand for numbers. CCSS. Math.Content.EE.6.5 • Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. CCSS. Math.Content.EE.6.6 • Use variables to represent numbers and write expressions when solving a			

		real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. CCSS. Math.Content.EE.6.7 ● Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. CCSS. Math.Content.EE.6.9 ● Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. CCSS. Math.Content.RP.6.1 ● Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* CCSS. Math.Content.RP.6.2 ● Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio			

		relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* CCSS. Math.Content.RP.6.3 ● Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.			
Navigating with Sensors ● Navigation ● Infrared Emitters and Receivers	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 ● Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 ● Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.4.5 ● Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text. CCSS. ELA.Content.RI.4.7 ● Interpret information presented visually, orally, or quantitatively (e.g., in charts,	CCSS. Math.Content.OA.4.3 ● 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. CCSS. Math.Content.NBT.4.2 ● Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. CCSS. Math.Content.NBT.4.3 ● Use place value understanding to round multi-digit whole numbers to any place. CCSS. Math.Content.NBT.4.4 ● Fluently add and subtract multi-digit whole numbers using the standard algorithm. CCSS. Math.Content.NBT.4.6 ● Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies	4-PS3 Energy ● 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light heat, and electric current. ● 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. MS-PS3 Energy ● MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the objects. 4-PS4 Waves and their Applications in Technologies for Information Transfer ● 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information. MS-PS4 Waves and their Applications in Technologies for Information Transfer ● MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or	*Practices* P3.Recognizing and Defining Computational Problems.1 *Identify complex, interdisciplinary, real-world problems that can be solved computationally.* P3.Recognizing and Defining Computational Problems.2 *Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.* P3.Recognizing and Defining Computational Problems.3 *Evaluate whether it is appropriate and feasible to solve a problem computationally.* P4.Developing and Using Abstractions.1 *Extract common features from a set of interrelated processes or complex phenomena.* P4.Developing and Using Abstractions.2 *Evaluate existing technological functionalities and incorporate them into new designs.* P4.Developing and Using Abstractions.3 *Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.* P5.Creating Computational Artifacts.1 *Plan the development of a computational artifact using an iterative process that includes*	● Self-directed ● Innovative ● Critical-thinking ● Reflection ● Revision ● Design-thinking ● Use technology

	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. CCSS. ELA.Content.RI.4.10 ● By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.4 ● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.4.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation). CCSS. ELA.Content.W.4.1 ● Write opinion pieces on topics or texts, supporting a point of view with reasons and information. CCSS. ELA.Content.W.4.8 ● Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. CCSS. ELA.Content.W.4.10	based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.MD.4.1 ● 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. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* CCSS. Math.Content.MD.4.5 ● Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. CCSS. Math.Content.MD.4.6 ● Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. CCSS. Math.Content.NF.4.2 ● Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	transmitted through various materials. ● MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. 3-5-ETS1 Engineering Design ● 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. ● 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. ● 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. MS-ETS1 Engineering Design ● MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. ● MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	*reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.* P5.Creating Computational Artifacts.2 *Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify an existing artifact to improve or customize it.* P6.Testing and Refining Computational Artifacts.1 *Systematically test computational artifacts by considering all scenarios and using test cases.* P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* P7.Communicating About Computing.1 *Select, organize, and interpret large data sets from multiple sources to support a claim.* *Concepts* 6-8.Computing Systems.Devices *The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can improve the design of devices and extend the abilities of humans.* 6-8.Computing Systems.Hardware and Software *Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system*	

	• Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.5.1 • Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 • Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 • Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.5.6 • Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent. CCSS. ELA.Content.RI.5.10 • By the end of the year, read and comprehend informational texts, including	CCSS. Math.Content.NBT.5.1 • 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. CCSS. Math.Content.NF.5.3 • Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* CCSS. Math.Content.NF.5.7 • Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. CCSS. Math.Content.MD.5.1 • 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. CCSS. Math.Content.NS.6.5 • Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level,	• MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*involves multiple tradeoffs, such as functionality, cost, size, speed, accessibility, and aesthetics.* 6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Data and Analysis.Collection *People design algorithms and tools to automate the collection of data by computers. When data collection is automated, data is sampled and converted into a form that a computer can process. For example, data from an analog sensor must be converted into a digital form. The method used to automate data collection is influenced by the availability of tools and the intended use of the data.* 6-8.Data and Analysis.Storage *Applications store data as a representation. Representations occur at multiple levels, from the arrangement of information into organized formats (such as tables in software) to the physical storage of bits. The software tools used to access information translate the low-level representation of bits into a form understandable by people.* 6-8.Algorithms and Programming.Variables *Programmers create variables to store data values of selected types. A meaningful identifier is assigned to each variable to access and perform operations on the value by name. Variables enable the flexibility to represent different situations, process different sets of data, and produce varying outputs.* 6-8.Algorithms and Programming.Control	

	history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*). CCSS. ELA.Content.W.5.1 ● Write opinion pieces on topics or texts, supporting a point of view with reasons and information. CCSS. ELA.Content.W.5.8 ● Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. CCSS. ELA.Content.W.5.10 ● Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CCSS. ELA.Content.SL.5.1 ● Write opinion pieces on topics or texts, supporting a point of view with reasons and information. CCSS. ELA.Content.RI.6.1	credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. CCSS. Math.Content.NS.6.6 ● Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. CCSS. Math.Content.NS.6.7 ● Understand ordering and absolute value of rational numbers. CCSS. Math.Content.RP.6.1 ● Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* CCSS. Math.Content.RP.6.2 ● Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* CCSS. Math.Content.RP.6.3 ● Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.		*Programmers select and combine control structures, such as loops, event handlers, and conditionals, to create more complex program behavior.* 6-8.Algorithms and Programming.Modularity *Programs use procedures to organize code, hide implementation details, and make code easier to reuse. Procedures can be repurposed in new programs. Defining parameters for procedures can generalize behavior and increase reusability.*	

	● Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS. ELA.Content.RI.6.2 ● Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS. ELA.Content.RI.6.3 ● Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). CCSS. ELA.Content.RI.6.4 ● Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS. ELA.Content.RI.6.5 ● Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS. ELA.Content.RI.6.6 ● Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.RI.6.7 ● Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. CCSS. ELA.Content.L.6.4 ● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.6.6				

	● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. CCSS. ELA.Content.W.6.1 ● Write arguments to support claims with clear reasons and relevant evidence. CCSS. ELA.Content.W.6.10 ● Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CCSS. ELA.Content.SL.6.1 ● Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.				
Hacker Port Expansion ● Hacker Port ● Pins ● LEDs ● Standard Servos ● PING))) Sensor	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 ● Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 ● Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.RI.4.4	CCSS. Math.Content.OA.4.1 ● Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. CCSS. Math.Content.OA.4.2 ● Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. CCSS. Math.Content.OA.4.3	5-PS1 Matter and Its Instructions ● 5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. 4-PS3 Energy ● 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sounds, light, heat, and electric currents. 4-PS4. Waves and Their Applications in Technologies for Information Transfer ● 4-PS4-3. Generate and compare multiple solutions	*Practices* P3.Recognizing and Defining Computational Problems.1 *Identify complex, interdisciplinary, real-world problems that can be solved computationally.* P3.Recognizing and Defining Computational Problems.2 *Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.* P3.Recognizing and Defining Computational Problems.3 *Evaluate whether it is appropriate and feasible to solve a problem computationally.* P4.Developing and Using Abstractions.1	● Self-directed ● Innovative ● Critical-thinking ● Reflection ● Revision ● Design-thinking ● Use technology

	● Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*. CCSS. ELA.Content.RI.4.5 ● Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.4.8 ● Explain how an author uses reasons and evidence to support particular points in a text. CCSS. ELA.Content.RI.4.9 ● Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.4.10 ● By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.4 ● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.4.6	● 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. CCSS. Math.Content.NBT.4.1 ● Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*. CCSS. Math.Content.NBT.4.5 ● Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.4.6 ● Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.MD.4.1 ● 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	that use patterns to transfer information. MS-PS4 Waves and Their Applications in Technologies for Information Transfer ● MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 3-5-ETS1 Engineering Design ● 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. 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Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	*Extract common features from a set of interrelated processes or complex phenomena.* P4.Developing and Using Abstractions.2 *Evaluate existing technological functionalities and incorporate them into new designs.* P5.Creating Computational Artifacts.1 *Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.* P5.Creating Computational Artifacts.2 *Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify an existing artifact to improve or customize it..* P6.Testing and Refining Computational Artifacts.1 *Systematically test computational artifacts by considering all scenarios and using test cases.* P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* *Concepts* 6-8.Computing Systems.Devices *The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can*	

	● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation). CCSS. ELA.Content.RI.5.1 ● Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 ● Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 ● Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.5.8 ● Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). CCSS. ELA.Content.RI.5.10	measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* CCSS. Math.Content.MD. 4.2 ● 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. CCSS. Math.Content.MD.4.5 ● Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. CCSS. Math.Content.MD.4.6 ● Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. CCSS. Math.Content.MD.4.7 ● Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	● MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*improve the design of devices and extend the abilities of humans.* 6-8.Computing Systems.Hardware and Software *Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple tradeoffs, such as functionality, cost, size, speed, accessibility, and aesthetics.* 6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Data and Analysis.Collection *People design algorithms and tools to automate the collection of data by computers. When data collection is automated, data is sampled and converted into a form that a computer can process. For example, data from an analog sensor must be converted into a digital form. The method used to automate data collection is influenced by the availability of tools and the intended use of the data.* 6-8.Data and Analysis.Storage *Applications store data as a representation. Representations occur at multiple levels, from the arrangement of information into organized formats (such as tables in software) to the physical storage of bits. The software tools used to access information translate the low-level representation of bits into a form understandable by people.* 6-8.Algorithms and Programming.Variables *Programmers create variables to store data values of selected types. A*	

	● 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. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., *however, although, nevertheless, similarly, moreover, in addition*). CCSS. ELA.Content.RI.6.1 ● Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS. ELA.Content.RI.6.2 ● Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS. ELA.Content.RI.6.3 ● Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). CCSS. ELA.Content.RI.6.4 ● Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS. ELA.Content.RI.6.5	CCSS. Math.Content.G.4.1 ● Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. CCSS. Math.Content.OA.5.1 ● Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. CCSS. Math.Content.OA.5.2 ● Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*. CCSS. Math.Content.OA.5.3 ● Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*. CCSS. Math.Content.NBT.5.1 ● 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. CCSS. Math.Content.NBT.5.3		*meaningful identifier is assigned to each variable to access and perform operations on the value by name. Variables enable the flexibility to represent different situations, process different sets of data, and produce varying outputs.* 6-8.Algorithms and Programming.Control *Programmers select and combine control structures, such as loops, event handlers, and conditionals, to create more complex program behavior.*	

	● Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS. ELA.Content.RI.6.6 ● Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.RI.6.7 ● Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. CCSS. ELA.Content.RI.6.8 ● Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. CCSS. ELA.Content.L.6.4 ● Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies. CCSS. ELA.Content.L.6.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	● Read, write, and compare decimals to thousandths. CCSS. Math.Content.NBT.5.4 ● Use place value understanding to round decimals to any place. CCSS. Math.Content.NBT.5.5 ● Fluently multiply multi-digit whole numbers using the standard algorithm. CCSS. Math.Content.NBT.5.6 ● Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. CCSS. Math.Content.NBT.5.7 ● Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. CCSS. Math.Content.MD.5.1 ● 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. CCSS. Math.Content.G.5.3 ● Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.			

		CCSS. Math.Content.G.5.4 ● Classify two-dimensional figures in a hierarchy based on properties. CCSS. Math.Content.NS.6.2 ● Fluently divide multi-digit numbers using the standard algorithm. CCSS. Math.Content.NS.6.3 ● Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. CCSS. Math.Content.NS.6.5 ● Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. CCSS. Math.Content.NS.6.6 ● Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. CCSS. Math.Content.NS.6.7 ● Understand ordering and absolute value of rational numbers. CCSS. Math.Content.EE.6.2 ● Write, read, and evaluate expressions in which letters stand for numbers. CCSS. Math.Content.EE.6.5 ● Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine			

		whether a given number in a specified set makes an equation or inequality true. CCSS. Math.Content.EE.6.6 ● Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. CCSS. Math.Content.EE.6.7 ● Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. CCSS. Math.Content.RP.6.1 ● Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* CCSS. Math.Content.RP.6.2 ● Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* CCSS. Math.Content.RP.6.3 ● Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.			

IR Remote Control with the S3 ● Sony IR Remote ● IR Receiver ● Hacker Port ● LEDs ● Remote Driving	CCSS. ELA.Content.RI.4.1 ● Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.4.2 ● Determine the main idea of a text and explain how it is supported by key details; summarize the text. CCSS. ELA.Content.RI.4.3 ● Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.4.5 ● Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text. CCSS. ELA.Content.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. CCSS. ELA.Content.RI.4.8 ● Explain how an author uses reasons and evidence to support particular points in a text. CCSS. ELA.Content.RI.4.9		4-PS3 Energy ● 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sounds, 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. 4-PS4. Waves and Their Applications in Technologies for Information Transfer ● 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information. MS-PS4 Waves and Their Applications in Technologies for Information Transfer ● MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. 3-5-ETS1 Engineering Design ● 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	*Practices* P1.Fostering an Inclusive Computing Culture.1 *Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.* P3.Recognizing and Defining Computational Problems.1 *Identify complex, interdisciplinary, real-world problems that can be solved computationally.* P3.Recognizing and Defining Computational Problems.2 *Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.* P3.Recognizing and Defining Computational Problems.3 *Evaluate whether it is appropriate and feasible to solve a problem computationally.* P4.Developing and Using Abstractions.1 *Extract common features from a set of interrelated processes or complex phenomena.* P4.Developing and Using Abstractions.2 *Evaluate existing technological functionalities and incorporate them into new designs.* P4.Developing and Using Abstractions.3 *Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.* P5.Creating Computational Artifacts.1 *Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.* P5.Creating Computational Artifacts.2	● Self-directed ● Innovative ● Critical-thinking ● Reflection ● Revision ● Design-thinking ● Use technology

	● Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.RI.4.10 ● By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CCSS. ELA.Content.L.4.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whines, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation). CCSS. ELA.Content.RI.5.1 ● Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. CCSS. ELA.Content.RI.5.2 ● Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. CCSS. ELA.Content.RI.5.3 ● Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. CCSS. ELA.Content.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*. CCSS. ELA.Content.RI.5.7		to identify aspects of a model or prototype that can be improved. MS-ETS1 Engineering Design ● MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. ● MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. ● MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*Create a computational artifact for practical intent, personal expression, or to address a societal issue.* P5.Creating Computational Artifacts.3 *Modify an existing artifact to improve or customize it..* P6.Testing and Refining Computational Artifacts.1 *Systematically test computational artifacts by considering all scenarios and using test cases.* P6.Testing and Refining Computational Artifacts.2 *Identify and fix errors using a systematic process.* P6.Testing and Refining Computational Artifacts.3 *Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.* P7.Communicating About Computing.2 *Describe, justify, and document computational processes using appropriate terminology consistent with the intended audience and purpose.* *Concepts* 6-8.Computing Systems.Devices *The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can improve the design of devices and extend the abilities of humans.* 6-8.Computing Systems.Hardware and Software *Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple tradeoffs, such as functionality, cost, size, speed, accessibility, and aesthetics.*	

	● 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. CCSS. ELA.Content.RI.5.8 ● Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). CCSS. ELA.Content.RI.5.9 ● Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. CCSS. ELA.Content.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. CCSS. ELA.Content.L.5.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition). CCSS. ELA.Content.RI.6.1 ● Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. CCSS. ELA.Content.RI.6.2 ● Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. CCSS. ELA.Content.RI.6.3 ● Analyze in detail how a key individual, event, or idea is introduced, illustrated, and			6-8.Computing Systems.Troubleshooting *Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.* 6-8.Data and Analysis.Collection *People design algorithms and tools to automate the collection of data by computers. When data collection is automated, data is sampled and converted into a form that a computer can process. For example, data from an analog sensor must be converted into a digital form. The method used to automate data collection is influenced by the availability of tools and the intended use of the data.* 6-8.Data and Analysis.Storage *Applications store data as a representation. Representations occur at multiple levels, from the arrangement of information into organized formats (such as tables in software) to the physical storage of bits. The software tools used to access information translate the low-level representation of bits into a form understandable by people.* 6-8.Algorithms and Programming.Variables *Programmers create variables to store data values of selected types. A meaningful identifier is assigned to each variable to access and perform operations on the value by name. Variables enable the flexibility to represent different situations, process different sets of data, and produce varying outputs.* 6-8.Algorithms and Programming.Control *Programmers select and combine control structures, such as loops, event*	

	elaborated in a text (e.g., through examples or anecdotes). CCSS. ELA.Content.RI.6.4 ● Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. CCSS. ELA.Content.RI.6.5 ● Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. CCSS. ELA.Content.RI.6.6 ● Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. CCSS. ELA.Content.RI.6.7 ● Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. CCSS. ELA.Content.L.6.6 ● Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.			*handlers, and conditionals, to create more complex program behavior.* 6-8.Algorithms and Programming.Modularity *Programmers use procedures to organize code, hide implementation details, and make code easier to reuse. Procedures can be repurposed in new programs. Defining parameters for procedures can generalize behavior and increase reusability.*	

1. K-12 Computer Science Framework. (2016). *Framework view by grade band.* Retrieved from http://www.k12cs.org