Main Criteria: Forward Education
Secondary Criteria: Alabama Courses of Study, Alaska Content and Performance Standards, Arizona's College and Career Ready Standards, Arkansas Standards, California Content Standards, Colorado Academic Standards (CAS), Connecticut State Standards, Delaware Standards and Instruction, Florida Standards, Georgia Standards of Excellence, Hawaii Content and Performance Standards
Subjects: Mathematics, Science, Technology Education
Grades: 5, 6, Key Stage 2

Forward Education

Smart Farming with Automated Watering

Alabama Courses of Study
Mathematics
Grade **5** - Adopted: **2019/Impl. 2020**

STRAND / DOMAIN		Mathematical Practices
OBJECTIVE / CATEGORY	MP1	Make sense of problems and persevere in solving them.
OBJECTIVE / CATEGORY	MP2	Reason abstractly and quantitatively.
OBJECTIVE / CATEGORY	MP3	Construct viable arguments and critique the reasoning of others.
OBJECTIVE / CATEGORY	MP4	Model with mathematics.
OBJECTIVE / CATEGORY	MP5	Use appropriate tools strategically.
OBJECTIVE / CATEGORY	MP7	Look for and make use of structure.

Alabama Courses of Study
Mathematics
Grade **6** - Adopted: **2019/Impl. 2020**

STRAND / DOMAIN		Mathematical Practices
OBJECTIVE / CATEGORY	MP1	Make sense of problems and persevere in solving them.
OBJECTIVE / CATEGORY	MP2	Reason abstractly and quantitatively.
OBJECTIVE / CATEGORY	MP3	Construct viable arguments and critique the reasoning of others.
OBJECTIVE / CATEGORY	MP4	Model with mathematics.
OBJECTIVE / CATEGORY	MP5	Use appropriate tools strategically.

| OBJECTIVE /
CATEGORY | MP7 | Look for and make use of structure. |

| STRAND /
DOMAIN		**Grade 6 Content Standards**
**OBJECTIVE /
CATEGORY**		**Proportional Reasoning**
STANDARD		**Develop an understanding of ratio concepts and use reasoning about ratios to solve problems.**

| RELATED
CONTENT /
EXPECTATION | 1. | Use appropriate notations [a/b, a to b, a:b] to represent a proportional relationship between quantities and use ratio language to describe the relationship between quantities. |

| STRAND /
DOMAIN		**Grade 6 Content Standards**
**OBJECTIVE /
CATEGORY**		**Algebra and Functions**
STANDARD		**Use equations and inequalities to represent and solve real-world or mathematical problems.**

| RELATED
CONTENT /
EXPECTATION | 18. | Determine whether a value is a solution to an equation or inequality by using substitution to conclude whether a given value makes the equation or inequality true. |

Alabama Courses of Study
Science
Grade **5** - Adopted: **2015**

| STRAND /
DOMAIN	AL.5.LS.	**LIFE SCIENCE**
**OBJECTIVE /
CATEGORY**		**Ecosystems: Interactions, Energy, and Dynamics**

| STANDARD | 5.LS.8. | Defend the position that plants obtain materials needed for growth primarily from air and water. |

| STRAND /
DOMAIN	AL.5.ESS.	**EARTH AND SPACE SCIENCE**
**OBJECTIVE /
CATEGORY**		**Earth and Human Activity**

| STANDARD | 5.ESS.16
. | Collect and organize scientific ideas that individuals and communities can use to protect Earth's natural resources and its environment (e.g., terracing land to prevent soil erosion, utilizing no-till farming to improve soil fertility, regulating emissions from factories and automobiles to reduce air pollution, recycling to reduce overuse of landfill areas). |

Alabama Courses of Study
Science
Grade **6** - Adopted: **2015**

| STRAND /
DOMAIN	AL.6.ESS.	**EARTH AND SPACE SCIENCE**
**OBJECTIVE /
CATEGORY**		**Earth and Human Activity**

STANDARD	6.ESS.15.	Analyze evidence (e.g., databases on human populations, rates of consumption of food and other natural resources) to explain how changes in human population, per capita consumption of natural resources, and other human activities (e.g., land use, resource development, water and air pollution, urbanization) affect Earth's systems.
STANDARD	6.ESS.16.	Implement scientific principles to design processes for monitoring and minimizing human impact on the environment (e.g., water usage, including withdrawal of water from streams and aquifers or construction of dams and levees; land usage, including urban development, agriculture, or removal of wetlands; pollution of air, water, and land).

Grade **6** - Adopted: **2014**

STRAND / DOMAIN	AL.RH.6-8.	Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / CATEGORY		Key Ideas and Details
STANDARD	RH.6-8.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
STANDARD	RH.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STRAND / DOMAIN	AL.RH.6-8.	Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / CATEGORY		Craft and Structure
STANDARD	RH.6-8.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to Grades 6-8 texts and topics.
STANDARD	RH.6-8.5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

STRAND / DOMAIN	AL.RH.6-8.	Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / CATEGORY		Integration of Knowledge and Ideas
STANDARD	RH.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
STANDARD	RH.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

STRAND / DOMAIN	AL.RH.6-8.	Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / CATEGORY		Range of Reading and Level of Text Complexity
STANDARD	RH.6-8.10.	By the end of Grade 8, read and comprehend science/technical texts in the Grades 6-8 text complexity band independently and proficiently.

STRAND / DOMAIN	AL.WHST.6-8.	Writing Standards for Literacy in Science, and Technical Subjects
OBJECTIVE / CATEGORY		Text Types and Purposes

STANDARD	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
RELATED CONTENT / EXPECTATION	WHST.6-8.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STRAND / DOMAIN	AL.WHST.6-8.	Writing Standards for Literacy in Science, and Technical Subjects
OBJECTIVE / CATEGORY		Production and Distribution of Writing
STANDARD	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Alabama Courses of Study
Technology Education
Grade **5** - Adopted: **2018**

STRAND / DOMAIN	AL.DLCS.5.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	5.1.	Computational Thinker
STANDARD		Algorithms
RELATED CONTENT / EXPECTATION	5.1.2.	Create an algorithm to solve a problem while detecting and debugging logical errors within the algorithm.
RELATED CONTENT / EXPECTATION	5.1.3.	Create an algorithm that is defined by simple pseudocode.
RELATED CONTENT / EXPECTATION	5.1.5.	Develop and recommend solutions to a given problem and explain the process to an audience.

STRAND / DOMAIN	AL.DLCS.5.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	5.1.	Computational Thinker
STANDARD		Programming and Development
RELATED CONTENT / EXPECTATION	5.1.6.	Create a working program in a block-based visual programming environment using arithmetic operators, conditionals, and repetition in programs.

STRAND / DOMAIN	AL.DLCS.5.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	5.5.	Innovative Designer
STANDARD		Design Thinking

| RELATED CONTENT / EXPECTATION | 5.5.28. | Develop, test, and refine prototypes as part of a cyclical design process to solve a complex problem. |

Alabama Courses of Study
Technology Education
Grade **6** - Adopted: **2018**

STRAND / DOMAIN	AL.DLCS. 6.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	6.1.	Computational Thinker
STANDARD		Abstraction

| RELATED CONTENT / EXPECTATION | 6.1.1. | Remove background details from an everyday process to highlight essential properties. |

STRAND / DOMAIN	AL.DLCS. 6.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	6.1.	Computational Thinker
STANDARD		Algorithms

| RELATED CONTENT / EXPECTATION | 6.1.5. | Identify algorithms that make use of sequencing, selection or iteration. |

STRAND / DOMAIN	AL.DLCS. 6.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	6.1.	Computational Thinker
STANDARD		Programming and Development

| RELATED CONTENT / EXPECTATION | 6.1.6. | Identify steps in developing solutions to complex problems using computational thinking. |

STRAND / DOMAIN	AL.DLCS. 6.	Digital Literacy and Computer Science
OBJECTIVE / CATEGORY	6.5.	Innovative Designer
STANDARD		Design Thinking

| RELATED CONTENT / EXPECTATION | 6.5.30. | Discuss and apply the components of the problem-solving process. |

Alaska Content and Performance Standards
Mathematics
Grade **5** - Adopted: **2012**

PERFORMANCE / CONTENT STANDARD	AK.MP.	Mathematical Practices

PERFORMANCE / CONTENT STANDARD	AK.MP.	
GRADE LEVEL EXPECTATION / STRAND	MP.1.	Make sense of problems and persevere in solving them.
GRADE LEVEL EXPECTATION / STRAND	MP.2.	Reason abstractly and quantitatively.
GRADE LEVEL EXPECTATION / STRAND	MP.3.	Construct viable arguments and critique the reasoning of others.
GRADE LEVEL EXPECTATION / STRAND	MP.4.	Model with mathematics.
GRADE LEVEL EXPECTATION / STRAND	MP.5.	Use appropriate tools strategically.
GRADE LEVEL EXPECTATION / STRAND	MP.7.	Look for and make use of structure.

Alaska Content and Performance Standards
Mathematics
Grade **6** - Adopted: **2012**

PERFORMANCE / CONTENT STANDARD	AK.MP.	Mathematical Practices
GRADE LEVEL EXPECTATION / STRAND	MP.1.	Make sense of problems and persevere in solving them.
GRADE LEVEL EXPECTATION / STRAND	MP.2.	Reason abstractly and quantitatively.
GRADE LEVEL EXPECTATION / STRAND	MP.3.	Construct viable arguments and critique the reasoning of others.
GRADE LEVEL EXPECTATION / STRAND	MP.4.	Model with mathematics.
GRADE LEVEL EXPECTATION / STRAND	MP.5.	Use appropriate tools strategically.
GRADE LEVEL EXPECTATION / STRAND	MP.7.	Look for and make use of structure.

PERFORMANCE / CONTENT STANDARD	AK.6.RP.	Ratios and Proportional Relationships
GRADE LEVEL EXPECTATION / STRAND		Understand ratio concepts and use ratio reasoning to solve problems.
GOAL	6.RP.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).

INDICATOR	6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios, and understand equivalencies.

PERFORMANCE / CONTENT STANDARD	AK.6.EE.	Expressions and Equations
GRADE LEVEL EXPECTATION / STRAND		Reason about and solve one-variable equations and inequalities.

GOAL	6.EE.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. For example: does 5 make $3x > 7$ true?

Alaska Content and Performance Standards
Science
Grade **5** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD	Matter and Energy in Organisms and Ecosystems

GRADE LEVEL EXPECTATION / STRAND	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

PERFORMANCE / CONTENT STANDARD	Earth's Systems

GRADE LEVEL EXPECTATION / STRAND	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

PERFORMANCE / CONTENT STANDARD	Engineering Design

GRADE LEVEL EXPECTATION / STRAND	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.
GRADE LEVEL EXPECTATION / STRAND	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.
GRADE LEVEL EXPECTATION / STRAND	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.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL LIFE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Interdependent Relationships in Ecosystems

GOAL	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Human Impacts

GOAL	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
GOAL	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

PERFORMANCE / CONTENT STANDARD		Alaska Computer Science Standards
GRADE LEVEL EXPECTATION / STRAND		Algorithms and Programming
GOAL		Algorithms

INDICATOR	5.AP.A.01.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

PERFORMANCE / CONTENT STANDARD		Alaska Digital Literacy Standards
GRADE LEVEL EXPECTATION / STRAND		Innovative Design

GOAL	3-5.ID.4.	Students demonstrate perseverance when working with open-ended problems.

PERFORMANCE / CONTENT STANDARD		Alaska Digital Literacy Standards
GRADE LEVEL EXPECTATION / STRAND		Computational Thinking

GOAL	3-5.CT.1.	Students explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking, with guidance from an educator.
GOAL	3-5.CT.3.	Students break down problems into smaller parts, identify key information and propose solutions.
GOAL	3-5.CT.4.	Students understand and explore basic concepts related to automation, patterns and algorithmic thinking.

PERFORMANCE / CONTENT STANDARD	Alaska Digital Literacy Standards
GRADE LEVEL EXPECTATION / STRAND	Global Collaboration

GOAL	3-5.GC.3.	Students perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

Alaska Content and Performance Standards
Technology Education
Grade **6** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD	Alaska Computer Science Standards
GRADE LEVEL EXPECTATION / STRAND	Algorithms and Programming
GOAL	Algorithms

INDICATOR	6.AP.A.01.	Use an existing algorithm in natural language or pseudocode to solve complex problems.

PERFORMANCE / CONTENT STANDARD	Alaska Computer Science Standards
GRADE LEVEL EXPECTATION / STRAND	Algorithms and Programming
GOAL	Program Development

INDICATOR	6.AP.PD.01.	Seek and incorporate feedback from team members to refine a solution to a problem.

PERFORMANCE / CONTENT STANDARD	Alaska Digital Literacy Standards
GRADE LEVEL EXPECTATION / STRAND	Innovative Design

GOAL	6-12.ID.1.	Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.
GOAL	6-12.ID.3.	Students engage in a design process to develop, test and revise prototypes, embracing the cyclical process of trial and error and understanding problems or setbacks as potential opportunities for improvement.

GOAL	6-12.ID.4.	Students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.
PERFORMANCE / CONTENT STANDARD		**Alaska Digital Literacy Standards**
GRADE LEVEL EXPECTATION / STRAND		**Computational Thinking**
GOAL	6-12.CT.1.	Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
GOAL	6-12.CT.3.	Students break problems into component parts, identify key pieces and use that information to problem solve.
GOAL	6-12.CT.4.	Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

Arizona's College and Career Ready Standards
Mathematics
Grade **5** - Adopted: **2018**

STRAND		**Standards for Mathematical Practice**
CONCEPT / STANDARD	MP.1	Make sense of problems and persevere in solving them.
CONCEPT / STANDARD	MP.2	Reason abstractly and quantitatively.
CONCEPT / STANDARD	MP.3	Construct viable arguments and critique the reasoning of others.
CONCEPT / STANDARD	MP.4	Model with mathematics.
CONCEPT / STANDARD	MP.5	Use appropriate tools strategically.
CONCEPT / STANDARD	MP.7	Look for and make use of structure.

Arizona's College and Career Ready Standards
Mathematics
Grade **6** - Adopted: **2018**

STRAND		**Standards for Mathematical Practice**
CONCEPT / STANDARD	MP.1	Make sense of problems and persevere in solving them.
CONCEPT / STANDARD	MP.2	Reason abstractly and quantitatively.

CONCEPT / STANDARD	MP.3	Construct viable arguments and critique the reasoning of others.

CONCEPT / STANDARD	MP.4	Model with mathematics.

CONCEPT / STANDARD	MP.5	Use appropriate tools strategically.

CONCEPT / STANDARD	MP.7	Look for and make use of structure.

STRAND		Ratio and Proportion (RP)
CONCEPT / STANDARD	6.RP.A	Understand ratio concepts and use ratio reasoning to solve problems.
PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	6.RP.A.3	Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).

OBJECTIVE / GRADE LEVEL EXPECTATION	6.RP.A.3. a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND		Expressions and Equations (EE)
CONCEPT / STANDARD	6.EE.B	Reason about and solve one-variable equations and inequalities.

PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	6.EE.B.5	Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Arizona's College and Career Ready Standards
Science
Grade **5** - Adopted: **2018**

STRAND		Core Ideas for Knowing Science
CONCEPT / STANDARD		Earth and Space Science

PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	E1:	The composition of the Earth and its atmosphere and the natural and human processes occurring within them shape the Earth's surface and its climate.

STRAND		Core Ideas for Knowing Science
CONCEPT / STANDARD		Life Science

PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	L2:	Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.

STRAND		Core Ideas for Using Science
CONCEPT / STANDARD	U2:	The knowledge produced by science is used in engineering and technologies to solve problems and/or create products.

STRAND		Core Ideas for Knowing Science
CONCEPT / STANDARD		**Earth and Space Science**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	E1:	The composition of the Earth and its atmosphere and the natural and human processes occurring within them shape the Earth's surface and its climate.

STRAND		Core Ideas for Knowing Science
CONCEPT / STANDARD		**Life Science**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	L2:	Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.

STRAND		Core Ideas for Using Science
CONCEPT / STANDARD	U2:	The knowledge produced by science is used in engineering and technologies to solve problems and/or create products.
STRAND		**Sixth Grade: Focus on Patterns; Scale, Proportion, and Quantity; Systems and System Models; Energy and Matter**
CONCEPT / STANDARD		**Life Sciences: Students develop an understanding of how energy from the Sun is transferred through ecosystems.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Life Science Standards**
OBJECTIVE / GRADE LEVEL EXPECTATION	6.L2U3.11.	Use evidence to construct an argument regarding the impact of human activities on the environment and how they positively and negatively affect the competition for energy and resources in ecosystems.

STRAND		Arizona Educational Technology Standards 2022
CONCEPT / STANDARD	**Standard 4.**	**Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.4.a.	Students, in collaboration with an educator, explore and practice a design process by generating ideas to solve a problem by planning, creating and testing innovative products that are shared with others.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.4.b.	Students, in collaboration with an educator, use digital and/or non-digital tools to plan and manage a design process.

STRAND		Arizona Educational Technology Standards 2022
CONCEPT / STANDARD	Standard 5.	Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.5.a.	Students, in collaboration with an educator, identify, explore or solve problems by selecting technology for data analysis, modeling, and algorithmic thinking.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.5.c.	Students, in collaboration with an educator, break down problems into smaller parts, identify key information, and propose solutions.

STRAND		Arizona Educational Technology Standards 2022
CONCEPT / STANDARD	Standard 6.	Creative Communicator - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.6.c.	Students, in collaboration with an educator, create digital artifacts using digital tools to communicate ideas visually, graphically, and/or auditorily.

Grade **5** - Adopted: **2018**

STRAND		Computer Science
CONCEPT / STANDARD		Practices
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	Practice 3.	Recognizing and Defining Computational Problems: The ability to recognize appropriate and worthwhile opportunities to apply computation is a skill that develops over time and is central to computing. Solving a problem with a computational approach requires defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate.
OBJECTIVE / GRADE LEVEL EXPECTATION	3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
OBJECTIVE / GRADE LEVEL EXPECTATION	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

STRAND		Computer Science
CONCEPT / STANDARD		Practices

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	Practice 5.	**Creating Computational Artifacts: The process of developing computational artifacts embraces both creative expression and the exploration of ideas to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to their community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps.**
OBJECTIVE / GRADE LEVEL EXPECTATION	5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.

STRAND		**Computer Science**
CONCEPT / STANDARD		**Practices**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	Practice 6.	**Testing and Refining Computational Artifacts: Testing and refinement is the deliberate and iterative process of improving a computational artifact. This process includes debugging (identifying and fixing errors) and comparing actual outcomes to intended outcomes. Students also respond to the changing needs and expectations of end users and improve the performance, reliability, usability, and accessibility of artifacts.**
OBJECTIVE / GRADE LEVEL EXPECTATION	6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.
OBJECTIVE / GRADE LEVEL EXPECTATION	6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Algorithms and Programming (AP)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Algorithms (A)**
OBJECTIVE / GRADE LEVEL EXPECTATION	5.AP.A.1.	Compare, test, and refine multiple algorithms for the same task and determine which is the most effective. Practice(s): Testing and Refining Computational Artifacts, Recognizing and Defining Computational Problems: 6.1, 6.3

Arizona's College and Career Ready Standards
Technology Education
Grade **6** - Adopted: **2022**

STRAND		**Arizona Educational Technology Standards 2022**
CONCEPT / STANDARD	Standard 3.	**Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.3.d.	Students explore real-world problems and issues and actively pursue solutions for them.

STRAND		**Arizona Educational Technology Standards 2022**
CONCEPT / STANDARD	Standard 4.	**Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.4.a.	Students engage in a design process for generating and testing ideas and developing innovative products to solve problems.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.4.b.	Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.4.c.	Students engage in a design process to develop, test, and revise prototypes, embrace the iterative process of trial and error, and understand setbacks as potential opportunities for improvement.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.4.d.	Students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.

STRAND		Arizona Educational Technology Standards 2022
CONCEPT / STANDARD	Standard 5.	Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.5.a.	Students practice defining and solving problems by selecting technology for data analysis, modeling, and algorithmic thinking.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.5.b.	Students find and organize data and use technology to analyze and represent it to solve problems and make decisions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.5.c.	Students break problems into component parts, identify key pieces, and use that information to solve problems.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.5.d.	Students understand how automation works and apply algorithmic thinking to design and automate solutions.

STRAND		Arizona Educational Technology Standards 2022
CONCEPT / STANDARD	Standard 6.	Creative Communicator - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.6.b.	Students create original works or responsibly repurpose digital resources into new creative works.

PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	6-8.6.c.	Students create artifacts using digital tools to communicate complex ideas textually, visually, graphically, and auditorily.

STRAND		Computer Science
CONCEPT / STANDARD		Practices
PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	Practic e 3.	**Recognizing and Defining Computational Problems: The ability to recognize appropriate and worthwhile opportunities to apply computation is a skill that develops over time and is central to computing. Solving a problem with a computational approach requires defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate.**

OBJECTIVE / GRADE LEVEL EXPECTATION	3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.

OBJECTIVE / GRADE LEVEL EXPECTATION	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

STRAND		Computer Science
CONCEPT / STANDARD		Practices
PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	Practic e 5.	**Creating Computational Artifacts: The process of developing computational artifacts embraces both creative expression and the exploration of ideas to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to their community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps.**

OBJECTIVE / GRADE LEVEL EXPECTATION	5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.

STRAND		Computer Science
CONCEPT / STANDARD		Practices
PERFORMANC E OBJECTIVE / PROFICIENCY LEVEL	Practic e 6.	**Testing and Refining Computational Artifacts: Testing and refinement is the deliberate and iterative process of improving a computational artifact. This process includes debugging (identifying and fixing errors) and comparing actual outcomes to intended outcomes. Students also respond to the changing needs and expectations of end users and improve the performance, reliability, usability, and accessibility of artifacts.**

OBJECTIVE / GRADE LEVEL EXPECTATION	6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.

OBJECTIVE / GRADE LEVEL EXPECTATION	6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Arkansas Standards

Mathematics

Grade **5** - Adopted: **2023**

STRAND / TOPIC		Grade 5 Mathematics Standards
CONTENT STANDARD	5.DA.	Data Analysis
PERFORMANCE EXPECTATION		Charts, Graphs, & Tables - Students organize and analyze data.

BENCHMARK / PROFICIENCY	5.DA.1.	Collect and interpret data from observations, surveys, and experiments; represent data using frequency tables, scaled bar graphs, and scaled line graphs.

Arkansas Standards
Mathematics
Grade **6** - Adopted: **2023**

STRAND / TOPIC		Grade 6 Mathematics Standards
CONTENT STANDARD	6.PR.	Proportional Relationships
PERFORMANCE EXPECTATION		Ratio & Rates - Students understand ratio concepts and use proportional reasoning to solve problems.

BENCHMARK / PROFICIENCY	6.PR.4.	Create various representations to compare ratios and find missing values to solve real-world and mathematical problems.

STRAND / TOPIC		Grade 6 Mathematics Standards
CONTENT STANDARD	6.ALG.	Algebra
PERFORMANCE EXPECTATION		Equations & Inequalities - Students focus on reasoning about and solving equations and inequalities.

BENCHMARK / PROFICIENCY	6.ALG.6.	Use substitution to determine if a given value in a specified set makes an equation or inequality true. Include the following inequality symbols: $<, >, \leq, \geq, \neq$

Arkansas Standards
Science
Grade **5** - Adopted: **2017**

STRAND / TOPIC	AR.SC.1.	Earth's Systems
CONTENT STANDARD		Students who demonstrate understanding can:

PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STRAND / TOPIC	AR.SC.4.	Matter and Energy in Organisms and Ecosystems
CONTENT STANDARD		Students who demonstrate understanding can:

STRAND / TOPIC	AR.SC.5.	Engineering, Technology, and Applications of Science		
CONTENT STANDARD		Students who demonstrate understanding can:		
PERFORMANC E EXPECTATION	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.		
PERFORMANC E EXPECTATION	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.		
PERFORMANC E EXPECTATION	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.		

Arkansas Standards
Science
Grade **6** - Adopted: **2017**

STRAND / TOPIC	AR.SC.5.	Human Impacts		
CONTENT STANDARD		Students who demonstrate understanding can:		
PERFORMANC E EXPECTATION	6-ESS3- 3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		
PERFORMANC E EXPECTATION	6-ESS3- 4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.		

STRAND / TOPIC	AR.SC.7.	Engineering, Technology, and Applications of Science		
CONTENT STANDARD		Students who demonstrate understanding can:		
PERFORMANC E EXPECTATION	6-ETS1- 1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.		
PERFORMANC E EXPECTATION	6-ETS1- 2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		
PERFORMANC E EXPECTATION	6-ETS1- 4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.		

Grade **6** - Adopted: **2010**

STRAND / TOPIC	AR.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
CONTENT STANDARD		**Key Ideas and Details**
PERFORMANCE EXPECTATION	RST.6-8.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
PERFORMANCE EXPECTATION	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STRAND / TOPIC	AR.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
CONTENT STANDARD		**Craft and Structure**
PERFORMANCE EXPECTATION	RST.6-8.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
PERFORMANCE EXPECTATION	RST.6-8.5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

STRAND / TOPIC	AR.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
CONTENT STANDARD		**Integration of Knowledge and Ideas**
PERFORMANCE EXPECTATION	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
PERFORMANCE EXPECTATION	RST.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

STRAND / TOPIC	AR.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
CONTENT STANDARD		**Range of Reading and Level of Text Complexity**
PERFORMANCE EXPECTATION	RST.6-8.10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

STRAND / TOPIC	AR.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
CONTENT STANDARD		**Text Types and Purposes**
PERFORMANCE EXPECTATION	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**

BENCHMARK / PROFICIENCY	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STRAND / TOPIC	**AR.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD		**Production and Distribution of Writing**
PERFORMANCE EXPECTATION	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
PERFORMANCE EXPECTATION	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Arkansas Standards
Technology Education
Grade **5** - Adopted: **2020/Beginning 2021**

STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Computational Thinking and Problem Solving**
PERFORMANCE EXPECTATION		**Content Cluster 1: Students will analyze and utilize problem-solving strategies.**
BENCHMARK / PROFICIENCY	CSK8.G5.1.1.	Identify and utilize level-appropriate, algorithmic problem-solving strategies
BENCHMARK / PROFICIENCY	CSK8.G5.1.3.	Evaluate effective ways that collaboration can support problem solving and innovation
BENCHMARK / PROFICIENCY	CSK8.G5.1.4.	Apply strategies for solving simple hardware and software problems that may occur during use

STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Algorithms and Programs**
PERFORMANCE EXPECTATION		**Content Cluster 5: Students will create, evaluate, and modify algorithms.**
BENCHMARK / PROFICIENCY	CSK8.G5.5.1.	Create algorithms to solve problems and evaluate effectiveness
BENCHMARK / PROFICIENCY	CSK8.G5.5.2.	Design and test algorithms collaboratively using technology
BENCHMARK / PROFICIENCY	CSK8.G5.5.4.	Identify and correct multiple errors within a level-appropriate algorithm

STRAND / TOPIC		Computer Science: 5-8 Standards Document
CONTENT STANDARD		Algorithms and Programs
PERFORMANC E EXPECTATION		Content Cluster 6: Students will create programs to solve problems.

BENCHMARK / PROFICIENCY	CSK8.G5 .6.1.	Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems

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Arkansas Standards
Technology Education
Grade **6** - Adopted: **2020/Beginning 2021**

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STRAND / TOPIC		Computer Science: 5-8 Standards Document
CONTENT STANDARD		Computational Thinking and Problem Solving
PERFORMANC E EXPECTATION		Content Cluster 1: Students will analyze and utilize problem-solving strategies.

BENCHMARK / PROFICIENCY	CSK8.G6 .1.1.	Identify and utilize level-appropriate, algorithmic problem-solving strategies
BENCHMARK / PROFICIENCY	CSK8.G6 .1.2.	Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity
BENCHMARK / PROFICIENCY	CSK8.G6 .1.3.	Analyze appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems
BENCHMARK / PROFICIENCY	CSK8.G6 .1.4.	Apply strategies for solving simple hardware and software problems that may occur during use

STRAND / TOPIC		Computer Science: 5-8 Standards Document
CONTENT STANDARD		Algorithms and Programs
PERFORMANC E EXPECTATION		Content Cluster 5: Students will create, evaluate, and modify algorithms.

BENCHMARK / PROFICIENCY	CSK8.G6 .5.1.	Create algorithms to solve problems and evaluate effectiveness
BENCHMARK / PROFICIENCY	CSK8.G6 .5.2.	Design and test algorithms collaboratively using technology
BENCHMARK / PROFICIENCY	CSK8.G6 .5.4.	Identify and correct errors within multiple level-appropriate algorithms

STRAND / TOPIC		Computer Science: 5-8 Standards Document

CONTENT STANDARD		Algorithms and Programs
PERFORMANCE EXPECTATION		Content Cluster 6: Students will create programs to solve problems.

BENCHMARK / PROFICIENCY	CSK8.G6 .6.1.	Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems

California Content Standards
Mathematics
Grade **5** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	CA.CC.M P.	Standards for Mathematical Practice
PERFORMANC E STANDARD / MODE	MP.1.	Make sense of problems and persevere in solving them.
PERFORMANC E STANDARD / MODE	MP.2.	Reason abstractly and quantitatively.
PERFORMANC E STANDARD / MODE	MP.3.	Construct viable arguments and critique the reasoning of others.
PERFORMANC E STANDARD / MODE	MP.4.	Model with mathematics.
PERFORMANC E STANDARD / MODE	MP.5.	Use appropriate tools strategically.
PERFORMANC E STANDARD / MODE	MP.7.	Look for and make use of structure.

California Content Standards
Mathematics
Grade **6** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	CA.CC.M P.	Standards for Mathematical Practice
PERFORMANC E STANDARD / MODE	MP.1.	Make sense of problems and persevere in solving them.
PERFORMANC E STANDARD / MODE	MP.2.	Reason abstractly and quantitatively.

PERFORMANCE STANDARD / MODE	MP.3.	Construct viable arguments and critique the reasoning of others.

PERFORMANCE STANDARD / MODE	MP.4.	Model with mathematics.

PERFORMANCE STANDARD / MODE	MP.5.	Use appropriate tools strategically.

PERFORMANCE STANDARD / MODE	MP.7.	Look for and make use of structure.

CONTENT STANDARD / DOMAIN / PART	CA.CC.6.RP.	Ratios and Proportional Relationships
PERFORMANCE STANDARD / MODE		Understand ratio concepts and use ratio reasoning to solve problems.
EXPECTATION / SUBSTRAND	6.RP.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.

FOUNDATION / PROFICIENCY LEVEL	6.RP.3.a.	Make tables of equivalent ratios relating quantities with wholenumber measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD / DOMAIN / PART	CA.CC.6.EE.	Expressions and Equations
PERFORMANCE STANDARD / MODE		Reason about and solve one-variable equations and inequalities.

EXPECTATION / SUBSTRAND	6.EE.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.

California Content Standards

Science

Grade **5** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	CA.5-LS.	LIFE SCIENCE
PERFORMANCE STANDARD / MODE	5-LS1.	From Molecules to Organisms: Structures and Processes
EXPECTATION / SUBSTRAND		Students who demonstrate understanding can:

FOUNDATION / PROFICIENCY LEVEL	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

CONTENT STANDARD / DOMAIN / PART	CA.5-ESS.	EARTH AND SPACE SCIENCE
PERFORMANCE STANDARD / MODE	5-ESS3.	Earth and Human Activity
EXPECTATION / SUBSTRAND		Students who demonstrate understanding can:

FOUNDATION / PROFICIENCY LEVEL	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CONTENT STANDARD / DOMAIN / PART	CA.3-5-ETS.	ENGINEERING DESIGN
PERFORMANCE STANDARD / MODE	3-5-ETS1.	Engineering Design
EXPECTATION / SUBSTRAND		Students who demonstrate understanding can:

FOUNDATION / PROFICIENCY LEVEL	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.
FOUNDATION / PROFICIENCY LEVEL	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.
FOUNDATION / PROFICIENCY LEVEL	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.

California Content Standards
Science
Grade **6** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	CA.MS-ESS.	EARTH AND SPACE SCIENCE
PERFORMANCE STANDARD / MODE	MS-ESS3.	Earth and Human Activity
EXPECTATION / SUBSTRAND		Students who demonstrate understanding can:

FOUNDATION / PROFICIENCY LEVEL	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

CONTENT STANDARD / DOMAIN / PART	CA.MS-ETS.	ENGINEERING DESIGN
PERFORMANCE STANDARD / MODE	MS-ETS1.	Engineering Design

EXPECTATION / SUBSTRAND		Students who demonstrate understanding can:
FOUNDATION / PROFICIENCY LEVEL	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
FOUNDATION / PROFICIENCY LEVEL	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
FOUNDATION / PROFICIENCY 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.
CONTENT STANDARD / DOMAIN / PART	CA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
PERFORMANCE STANDARD / MODE		Key Ideas and Details
EXPECTATION / SUBSTRAND	RST.6-8.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
EXPECTATION / SUBSTRAND	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
CONTENT STANDARD / DOMAIN / PART	CA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
PERFORMANCE STANDARD / MODE		Craft and Structure
EXPECTATION / SUBSTRAND	RST.6-8.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
EXPECTATION / SUBSTRAND	RST.6-8.5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
CONTENT STANDARD / DOMAIN / PART	CA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
PERFORMANCE STANDARD / MODE		Integration of Knowledge and Ideas
EXPECTATION / SUBSTRAND	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
EXPECTATION / SUBSTRAND	RST.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
CONTENT STANDARD / DOMAIN / PART	CA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects

PERFORMANC E ST ANDARD / MODE		**Range of Reading and Level of Text Complexity**
EXPECTATION / SUBSTRAND	RST.6-8.10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

CONTENT ST ANDARD / DOMAIN / PART	**CA.WHST .6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
PERFORMANC E ST ANDARD / MODE		**Text Types and Purposes**
EXPECT AT ION / SUBST RAND	**WHST .6 -8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
FOUNDATION / PROFICIENCY LEVEL	WHST.6-8.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

CONTENT ST ANDARD / DOMAIN / PART	**CA.WHST .6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
PERFORMANC E ST ANDARD / MODE		**Production and Distribution of Writing**
EXPECTATION / SUBSTRAND	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
EXPECTATION / SUBSTRAND	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

California Content Standards
Technology Education
Grade **5** - Adopted: **2018**

CONTENT ST ANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANC E ST ANDARD / MODE	**P3.**	**Core Practice 3 – Recognizing and Defining Computational Problems**
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.

CONTENT ST ANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANC E ST ANDARD / MODE		**Program Development**
EXPECTATION / SUBSTRAND	3-5.AP.15.	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others. (P1.1, P5.1)
EXPECTATION / SUBSTRAND	3-5.AP.19.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

California Content Standards
Technology Education
Grade **6** - Adopted: **2018**

CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P3.	Core Practice 3 – Recognizing and Defining Computational Problems
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.

CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Algorithms
EXPECTATION / SUBSTRAND	6-8.AP.10.	Use flowcharts and/or pseudocode to design and illustrate algorithms that solve complex problems. (P4.1, P4.4)

Colorado Academic Standards (CAS)
Mathematics
Grade **5** - Adopted: **2018**

CONTENT AREA		Prepared Graduates in Mathematics
STANDARD	MP1.	Make sense of problems and persevere in solving them.
STANDARD	MP2.	Reason abstractly and quantitatively.
STANDARD	MP3.	Construct viable arguments and critique the reasoning of others.
STANDARD	MP4.	Model with mathematics.
STANDARD	MP5.	Use appropriate tools strategically.
STANDARD	MP7.	Look for and make use of structure.

Colorado Academic Standards (CAS)
Mathematics
Grade **6** - Adopted: **2018**

CONTENT AREA		Prepared Graduates in Mathematics
STANDARD	MP1.	Make sense of problems and persevere in solving them.
STANDARD	MP2.	Reason abstractly and quantitatively.
STANDARD	MP3.	Construct viable arguments and critique the reasoning of others.

STANDARD	MP4.	Model with mathematics.
STANDARD	MP5.	Use appropriate tools strategically.
STANDARD	MP7.	Look for and make use of structure.

CONTENT AREA		Sixth Grade, Standard 1. Number and Quantity
STANDARD	6.RP.A.	Ratios & Proportional Relationships: Understand ratio concepts and use ratio reasoning to solve problems.
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES	6.RP.A.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (CCSS: 6.RP.A.3)
INDICATOR	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. (CCSS: 6.RP.A.3.a)

CONTENT AREA		Sixth Grade, Standard 2. Algebra and Functions
STANDARD	6.EE.B.	Expressions & Equations: Reason about and solve one-variable equations and inequalities.
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES	6.EE.B.5.	Describe 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: 6.EE.B.5)

Colorado Academic Standards (CAS)
Science
Grade **5** - Adopted: **2018**

CONTENT AREA		Prepared Graduates in Science
STANDARD	1	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding structure, properties and interactions of matter.
STANDARD	2	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding interactions between objects and within systems of objects.
STANDARD	3	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how energy is transferred and conserved.
STANDARD	4	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how waves are used to transfer energy and information.
STANDARD	5	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how individual organisms are configured and how these structures function to support life, growth, behavior and reproduction.

STANDARD	6	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how living systems interact with the biotic and abiotic environment.
STANDARD	7	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how genetic and environmental factors influence variation of organisms across generations.
STANDARD	8	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how natural selection drives biological evolution accounting for the unity and diversity of organisms.
STANDARD	9	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding the universe and Earth's place in it.
STANDARD	10	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how and why Earth is constantly changing.
STANDARD	11	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how human activities and the Earth's surface processes interact.

CONTENT AREA	SC.5.2.	Life Science
STANDARD	SC.5.2.1.	Plants acquire their material from growth chiefly from air and water.
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES		Students Can:
INDICATOR	SC.5.2.1.a.	Support an argument that plants get the materials they need for growth chiefly from air and water. (5-LS1-1)

CONTENT AREA	SC.5.3.	Earth and Space Science
STANDARD	SC.5.3.5.	Societal activities have had major effects on land, ocean, atmosphere and even outer space.
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES		Students Can:
INDICATOR	SC.5.3.5.a.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (5-ESS3-1)

Colorado Academic Standards (CAS)

Science

Grade **6** - Adopted: **2018**

CONTENT AREA	Prepared Graduates in Science

STANDARD	1	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding structure, properties and interactions of matter.
STANDARD	2	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding interactions between objects and within systems of objects.
STANDARD	3	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how energy is transferred and conserved.
STANDARD	4	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how waves are used to transfer energy and information.
STANDARD	5	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how individual organisms are configured and how these structures function to support life, growth, behavior and reproduction.
STANDARD	6	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how living systems interact with the biotic and abiotic environment.
STANDARD	7	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how genetic and environmental factors influence variation of organisms across generations.
STANDARD	8	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how natural selection drives biological evolution accounting for the unity and diversity of organisms.
STANDARD	9	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding the universe and Earth's place in it.
STANDARD	10	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how and why Earth is constantly changing.
STANDARD	11	Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how human activities and the Earth's surface processes interact.

CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.7.**	**Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.2.7.b.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)

CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.12.**	**Biodiversity is the wide range of existing life forms that have adapted to the variety of conditions on Earth, from terrestrial to marine ecosystems.**

CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES		Students Can:
INDICATOR	SC.MS.2.12.a.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)

CONTENT AREA	SC.MS.3.	Earth and Space Science
STANDARD	SC.MS.3.10.	Human activities have altered the biosphere, sometimes damaging it, although changes to environments can have different impacts for different living things.
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES		Students Can:
INDICATOR	SC.MS.3.10.a.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3)
INDICATOR	SC.MS.3.10.b.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (MS-ESS3-4)

Connecticut State Standards
Mathematics
Grade **5** - Adopted: **2010**

DOMAIN / CONTENT STANDARD	CT.CC.MP.5.	Mathematical Practices
STATE FRAMEWORK	MP.5.1.	Make sense of problems and persevere in solving them.
STATE FRAMEWORK	MP.5.2.	Reason abstractly and quantitatively.
STATE FRAMEWORK	MP.5.3.	Construct viable arguments and critique the reasoning of others.
STATE FRAMEWORK	MP.5.4.	Model with mathematics.
STATE FRAMEWORK	MP.5.5.	Use appropriate tools strategically.
STATE FRAMEWORK	MP.5.7.	Look for and make use of structure.

Connecticut State Standards
Mathematics
Grade **6** - Adopted: **2010**

DOMAIN / CONTENT STANDARD	CT.CC.MP.6.	Mathematical Practices
STATE FRAMEWORK	MP.6.1.	Make sense of problems and persevere in solving them.
STATE FRAMEWORK	MP.6.2.	Reason abstractly and quantitatively.
STATE FRAMEWORK	MP.6.3.	Construct viable arguments and critique the reasoning of others.
STATE FRAMEWORK	MP.6.4.	Model with mathematics.
STATE FRAMEWORK	MP.6.5.	Use appropriate tools strategically.
STATE FRAMEWORK	MP.6.7.	Look for and make use of structure.

DOMAIN / CONTENT STANDARD	CT.CC.RP.6.	Ratios and Proportional Relationships
STATE FRAMEWORK		Understand ratio concepts and use ratio reasoning to solve problems.
GRADE LEVEL EXPECTATION	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.
INDICATOR	RP.6.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

DOMAIN / CONTENT STANDARD	CT.CC.EE.6.	Expressions and Equations
STATE FRAMEWORK		Reason about and solve one-variable equations and inequalities.
GRADE LEVEL EXPECTATION	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.

Connecticut State Standards
Science
Grade **5** - Adopted: **2015**

DOMAIN / CONTENT STANDARD	NGSS.5-LS.	LIFE SCIENCE
STATE FRAMEWORK	5-LS1.	From Molecules to Organisms: Structures and Processes
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

DOMAIN / CONTENT STANDARD	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
STATE FRAMEWORK	5-ESS3.	Earth and Human Activity
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

DOMAIN / CONTENT STANDARD	NGSS.3-5-ETS.	ENGINEERING DESIGN
STATE FRAMEWORK	3-5-ETS1.	Engineering Design
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	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.

INDICATOR	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.

INDICATOR	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.

Connecticut State Standards
Science
Grade **6** - Adopted: **2015**

DOMAIN / CONTENT STANDARD	NGSS.MS-LS.	LIFE SCIENCE
STATE FRAMEWORK	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

DOMAIN / CONTENT STANDARD	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
STATE FRAMEWORK	MS-ESS3.	Earth and Human Activity
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

INDICATOR	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

DOMAIN / CONTENT STANDARD	NGSS.MS-ETS.	ENGINEERING DESIGN
STATE FRAMEWORK	MS-ETS1.	Engineering Design
GRADE LEVEL EXPECTATION		Students who demonstrate understanding can:

INDICATOR	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
INDICATOR	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
INDICATOR	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.

Connecticut State Standards
Technology Education
Grade **5** - Adopted: **2017**

DOMAIN / CONTENT STANDARD		CSTA K-12 Computer Science Standards
STATE FRAMEWORK	CSTA.1B.	Level 1B (Ages 8-11)
GRADE LEVEL EXPECTATION	1B-AP.	Algorithms & Programming
INDICATOR		Program Development

INDICATOR	1B-AP-13.	Use an iterative process to plan the development of a program by including others'' perspectives and considering user preferences. (P1.1, P5.1)
INDICATOR	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)
INDICATOR	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

DOMAIN / CONTENT STANDARD		CSTA K-12 Computer Science Standards
STATE FRAMEWORK	CSTA.1B.	Level 1B (Ages 8-11)
GRADE LEVEL EXPECTATION	1B-IC.	Impacts of Computing
INDICATOR		Social Interactions

INDICATOR	1B-IC-20.	Seek diverse perspectives for the purpose of improving computational artifacts. (P1.1)

Grade **5** - Adopted: **2016**

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.3.	Knowledge Constructors: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
GRADE LEVEL EXPECTATION	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.4.	Innovative Designers: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
GRADE LEVEL EXPECTATION	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
GRADE LEVEL EXPECTATION	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.5.	Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
GRADE LEVEL EXPECTATION	ISTE-S.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.
GRADE LEVEL EXPECTATION	ISTE-S.5.b.	Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
GRADE LEVEL EXPECTATION	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Connecticut State Standards
Technology Education
Grade **6** - Adopted: **2017**

DOMAIN / CONTENT STANDARD		CSTA K-12 Computer Science Standards
STATE FRAMEWORK	CSTA.2.	Level 2 (Ages 11-14)
GRADE LEVEL EXPECTATION	2-AP.	Algorithms & Programming
INDICATOR		Algorithms
INDICATOR	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

DOMAIN / CONTENT STANDARD		CSTA K-12 Computer Science Standards

STATE FRAMEWORK	CSTA.2.	Level 2 (Ages 11-14)
GRADE LEVEL EXPECTATION	2-AP.	Algorithms & Programming
INDICATOR		Modularity
INDICATOR	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

DOMAIN / CONTENT STANDARD		CSTA K-12 Computer Science Standards
STATE FRAMEWORK	CSTA.2.	Level 2 (Ages 11-14)
GRADE LEVEL EXPECTATION	2-IC.	Impacts of Computing
INDICATOR		Social Interactions
INDICATOR	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P2.4, P5.2)

Grade **6** - Adopted: **2016**

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.3.	Knowledge Constructors: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
GRADE LEVEL EXPECTATION	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.4.	Innovative Designers: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
GRADE LEVEL EXPECTATION	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
GRADE LEVEL EXPECTATION	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.5.	Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
GRADE LEVEL EXPECTATION	ISTE-S.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.
GRADE LEVEL EXPECTATION	ISTE-S.5.b.	Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

GRADE LEVEL EXPECTATION	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Delaware Standards and Instruction
Mathematics
Grade **5** - Adopted: **2010**

STANDARD / STRAND	DE.CC.5. MP.	Mathematical Practices
STRAND / INDICATOR	CC.5.MP .1.	Make sense of problems and persevere in solving them.
STRAND / INDICATOR	CC.5.MP .2.	Reason abstractly and quantitatively.
STRAND / INDICATOR	CC.5.MP .3.	Construct viable arguments and critique the reasoning of others.
STRAND / INDICATOR	CC.5.MP .4.	Model with mathematics.
STRAND / INDICATOR	CC.5.MP .5.	Use appropriate tools strategically.
STRAND / INDICATOR	CC.5.MP .7.	Look for and make use of structure.

Delaware Standards and Instruction
Mathematics
Grade **6** - Adopted: **2010**

STANDARD / STRAND	DE.CC.6. MP.	Mathematical Practices
STRAND / INDICATOR	CC.6.MP .1.	Make sense of problems and persevere in solving them.
STRAND / INDICATOR	CC.6.MP .2.	Reason abstractly and quantitatively.
STRAND / INDICATOR	CC.6.MP .3.	Construct viable arguments and critique the reasoning of others.
STRAND / INDICATOR	CC.6.MP .4.	Model with mathematics.
STRAND / INDICATOR	CC.6.MP .5.	Use appropriate tools strategically.
STRAND / INDICATOR	CC.6.MP .7.	Look for and make use of structure.

STANDARD / STRAND	DE.CC.6.RP.	Ratios and Proportional Relationships
STRAND / INDICATOR		Understand ratio concepts and use ratio reasoning to solve problems.
ENDURING UNDERSTANDING	CC.6.RP.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.

BENCHMARK	CC.6.RP.3a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STANDARD / STRAND	DE.CC.6.EE.	Expressions and Equations
STRAND / INDICATOR		Reason about and solve one-variable equations and inequalities.

ENDURING UNDERSTANDING	CC.6.EE.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.

Delaware Standards and Instruction
Science
Grade **5** - Adopted: **2013**

STANDARD / STRAND	DE.5-LS.	LIFE SCIENCE
STRAND / INDICATOR	5-LS1.	From Molecules to Organisms: Structures and Processes
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STANDARD / STRAND	DE.5-ESS.	EARTH AND SPACE SCIENCE
STRAND / INDICATOR	5-ESS3.	Earth and Human Activity
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STANDARD / STRAND	DE.3-5-ETS.	ENGINEERING DESIGN
STRAND / INDICATOR	3-5-ETS1.	Engineering Design
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	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.

BENCHMARK	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.

BENCHMARK	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.

Delaware Standards and Instruction
Science
Grade **6** - Adopted: **2013**

STANDARD / STRAND	DE.MS-LS.	LIFE SCIENCE
STRAND / INDICATOR	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

STANDARD / STRAND	DE.MS-ESS.	EARTH AND SPACE SCIENCE
STRAND / INDICATOR	MS-ESS3.	Earth and Human Activity
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

BENCHMARK	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

STANDARD / STRAND	DE.MS-ETS.	ENGINEERING DESIGN
STRAND / INDICATOR	MS-ETS1.	Engineering Design
ENDURING UNDERSTANDING		Students who demonstrate understanding can:

BENCHMARK	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

BENCHMARK	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

BENCHMARK	MS-ETS1-4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Grade **6** - Adopted: **2010**

STANDARD / STRAND	DE.CC6-8RS/TS.	Reading Standards for Literacy in Science and Technical Subjects 6-12

STRAND / INDICATOR		Key Ideas and Details
ENDURING UNDERSTANDING	CC6-8RS/TS2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
ENDURING UNDERSTANDING	CC6-8RS/TS3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STANDARD / STRAND	DE.CC6-8RS/TS.	Reading Standards for Literacy in Science and Technical Subjects 6-12
STRAND / INDICATOR		Craft and Structure
ENDURING UNDERSTANDING	CC6-8RS/TS4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
ENDURING UNDERSTANDING	CC6-8RS/TS5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

STANDARD / STRAND	DE.CC6-8RS/TS.	Reading Standards for Literacy in Science and Technical Subjects 6-12
STRAND / INDICATOR		Integration of Knowledge and Ideas
ENDURING UNDERSTANDING	CC6-8RS/TS7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
ENDURING UNDERSTANDING	CC6-8RS/TS9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

STANDARD / STRAND	DE.CC6-8RS/TS.	Reading Standards for Literacy in Science and Technical Subjects 6-12
STRAND / INDICATOR		Range of Reading and Level of Text Complexity
ENDURING UNDERSTANDING	CC6-8RS/TS10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

STANDARD / STRAND	DE.CC6-8WH/S/TS.	Writing Standards for Literacy in Science and Technical Subjects 6-12
STRAND / INDICATOR		Text Types and Purposes
ENDURING UNDERSTANDING	CC6-8WH/S/TS2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

BENCHMARK	CC6-8WH/S/TS 2d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.
STANDARD / STRAND	**DE.CC6-8WH/S/TS.**	**Writing Standards for Literacy in Science and Technical Subjects 6-12**
STRAND / INDICATOR		**Production and Distribution of Writing**
ENDURING UNDERSTANDING	CC6-8WH/S/TS4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
ENDURING UNDERSTANDING	CC6-8WH/S/TS6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Delaware Standards and Instruction
Technology Education
Grade **5** - Adopted: **2018**

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1B.**	**Level 1B (Ages 8-11)**
ENDURING UNDERSTANDING	**1B-AP.**	**Algorithms & Programming**
BENCHMARK		**Program Development**
EXPECTATION	1B-AP-13.	Use an iterative process to plan the development of a program by including others'' perspectives and considering user preferences. (P1.1, P5.1)
EXPECTATION	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)
EXPECTATION	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1B.**	**Level 1B (Ages 8-11)**
ENDURING UNDERSTANDING	**1B-IC.**	**Impacts of Computing**
BENCHMARK		**Social Interactions**
EXPECTATION	1B-IC-20.	Seek diverse perspectives for the purpose of improving computational artifacts. (P1.1)

Delaware Standards and Instruction
Technology Education
Grade **6** - Adopted: **2018**

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTAND ING	2-AP.	Algorithms & Programming
BENCHMARK		Algorithms

EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTAND ING	2-AP.	Algorithms & Programming
BENCHMARK		Modularity

EXPECTATION	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTAND ING	2-IC.	Impacts of Computing
BENCHMARK		Social Interactions

EXPECTATION	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P2.4, P5.2)

Florida Standards
Mathematics
Grade **5** - Adopted: **2020**

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 1: Actively participate in effortful learning both individually and collectively.
BENCHMARK	MA.K12. MTR.1.1	Mathematicians who participate in effortful learning both individually and with others:

INDICATOR	MA.K12. MTR.1.1a	Analyze the problem in a way that makes sense given the task.

INDICATOR	MA.K12. MTR.1.1b	Ask questions that will help with solving the task.

INDICATOR	MA.K12. MTR.1.1c	Build perseverance by modifying methods as needed while solving a challenging task.

INDICATOR	MA.K12. MTR.1.1d	Stay engaged and maintain a positive mindset when working to solve tasks.
INDICATOR	MA.K12. MTR.1.1e	Help and support each other when attempting a new method or approach.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		**Standard 2: Demonstrate understanding by representing problems in multiple ways.**
BENCHMARK	**MA.K12. MTR.2.1**	**Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:**
INDICATOR	MA.K12. MTR.2.1a	Build understanding through modeling and using manipulatives.
INDICATOR	MA.K12. MTR.2.1b	Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.
INDICATOR	MA.K12. MTR.2.1c	Progress from modeling problems with objects and drawings to using algorithms and equations.
INDICATOR	MA.K12. MTR.2.1e	Choose a representation based on the given context or purpose.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		**Standard 3: Complete tasks with mathematical fluency.**
BENCHMARK	**MA.K12. MTR.3.1**	**Complete tasks with mathematical fluency.Mathematicians who complete tasks with mathematical fluency:**
INDICATOR	MA.K12. MTR.3.1a	Select efficient and appropriate methods for solving problems within the given context.
INDICATOR	MA.K12. MTR.3.1b	Maintain flexibility and accuracy while performing procedures and mental calculations.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		**Standard 4: Engage in discussions that reflect on the mathematical thinking of self and others.**
BENCHMARK	**MA.K12. MTR.4.1**	**Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:**
INDICATOR	MA.K12. MTR.4.1a	Communicate mathematical ideas, vocabulary and methods effectively.
INDICATOR	MA.K12. MTR.4.1b	Analyze the mathematical thinking of others.
INDICATOR	MA.K12. MTR.4.1c	Compare the efficiency of a method to those expressed by others.

INDICATOR	MA.K12. MTR.4.1e	Justify results by explaining methods and processes.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 5: Use patterns and structure to help understand and connect mathematical concepts.
BENCHMARK	MA.K12. MTR.5.1	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:
INDICATOR	MA.K12. MTR.5.1a	Focus on relevant details within a problem.
INDICATOR	MA.K12. MTR.5.1b	Create plans and procedures to logically order events, steps or ideas to solve problems.
INDICATOR	MA.K12. MTR.5.1c	Decompose a complex problem into manageable parts.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 7: Apply mathematics to real-world contexts.
BENCHMARK	MA.K12. MTR.7.1	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:
INDICATOR	MA.K12. MTR.7.1a	Connect mathematical concepts to everyday experiences.
INDICATOR	MA.K12. MTR.7.1b	Use models and methods to understand, represent and solve problems.
INDICATOR	MA.K12. MTR.7.1c	Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.

Florida Standards
Mathematics
Grade **6** - Adopted: **2020**

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 1: Actively participate in effortful learning both individually and collectively.
BENCHMARK	MA.K12. MTR.1.1	Mathematicians who participate in effortful learning both individually and with others:
INDICATOR	MA.K12. MTR.1.1a	Analyze the problem in a way that makes sense given the task.
INDICATOR	MA.K12. MTR.1.1b	Ask questions that will help with solving the task.
INDICATOR	MA.K12. MTR.1.1c	Build perseverance by modifying methods as needed while solving a challenging task.

INDICATOR	MA.K12. MTR.1.1d	Stay engaged and maintain a positive mindset when working to solve tasks.
INDICATOR	MA.K12. MTR.1.1e	Help and support each other when attempting a new method or approach.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 2: Demonstrate understanding by representing problems in multiple ways.
BENCHMARK	MA.K12. MTR.2.1	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:
INDICATOR	MA.K12. MTR.2.1a	Build understanding through modeling and using manipulatives.
INDICATOR	MA.K12. MTR.2.1b	Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.
INDICATOR	MA.K12. MTR.2.1c	Progress from modeling problems with objects and drawings to using algorithms and equations.
INDICATOR	MA.K12. MTR.2.1e	Choose a representation based on the given context or purpose.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 3: Complete tasks with mathematical fluency.
BENCHMARK	MA.K12. MTR.3.1	Complete tasks with mathematical fluency.Mathematicians who complete tasks with mathematical fluency:
INDICATOR	MA.K12. MTR.3.1a	Select efficient and appropriate methods for solving problems within the given context.
INDICATOR	MA.K12. MTR.3.1b	Maintain flexibility and accuracy while performing procedures and mental calculations.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 4: Engage in discussions that reflect on the mathematical thinking of self and others.
BENCHMARK	MA.K12. MTR.4.1	Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:
INDICATOR	MA.K12. MTR.4.1a	Communicate mathematical ideas, vocabulary and methods effectively.
INDICATOR	MA.K12. MTR.4.1b	Analyze the mathematical thinking of others.
INDICATOR	MA.K12. MTR.4.1c	Compare the efficiency of a method to those expressed by others.

INDICATOR	MA.K12. MTR.4.1e	Justify results by explaining methods and processes.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 5: Use patterns and structure to help understand and connect mathematical concepts.
BENCHMARK	MA.K12. MTR.5.1	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

INDICATOR	MA.K12. MTR.5.1a	Focus on relevant details within a problem.
INDICATOR	MA.K12. MTR.5.1b	Create plans and procedures to logically order events, steps or ideas to solve problems.
INDICATOR	MA.K12. MTR.5.1c	Decompose a complex problem into manageable parts.

BODY OF KNOWLEDGE		Mathematical Thinking and Reasoning
BIG IDEA		Standard 7: Apply mathematics to real-world contexts.
BENCHMARK	MA.K12. MTR.7.1	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:

INDICATOR	MA.K12. MTR.7.1a	Connect mathematical concepts to everyday experiences.
INDICATOR	MA.K12. MTR.7.1b	Use models and methods to understand, represent and solve problems.
INDICATOR	MA.K12. MTR.7.1c	Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.

BODY OF KNOWLEDGE		Algebraic Reasoning
BIG IDEA		Standard 3: Understand ratio and unit rate concepts and use them to solve problems.
BENCHMARK	MA.6.AR. 3.3.	Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-to-part ratios and part-to-part-to-whole ratios.

Florida Standards
Science
Grade **5** - Adopted: **2008**

BODY OF KNOWLEDGE	FL.SC.5. N.	Nature of Science
BIG IDEA	SC.5.N. 1.	The Practice of Science - A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation. B: The processes of science frequently do not correspond to the traditional portrayal of ''the scientific method.'' C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge. D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK	SC.5.N.1.1.	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
BENCHMARK	SC.5.N.1.2.	Explain the difference between an experiment and other types of scientific investigation.
BENCHMARK	SC.5.N.1.6.	Recognize and explain the difference between personal opinion/interpretation and verified observation.

BODY OF KNOWLEDGE	FL.SC.5.N.	Nature of Science
BIG IDEA	SC.5.N.2.	The Characteristics of Scientific Knowledge - A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion. B: Scientific knowledge is durable and robust, but open to change. C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK	SC.5.N.2.1.	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.

Florida Standards
Science
Grade **6** - Adopted: **2008**

BODY OF KNOWLEDGE	FL.SC.6.N.	Nature of Science
BIG IDEA	SC.6.N.1.	The Practice of Science - A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation. B: The processes of science frequently do not correspond to the traditional portrayal of ''the scientific method.'' C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge. D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK	SC.6.N.1.1.	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
BENCHMARK	SC.6.N.1.3.	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.
BENCHMARK	SC.6.N.1.4.	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.

Florida Standards
Technology Education
Grade **5** - Adopted: **2016**

BODY OF KNOWLEDGE	FL.SC.35.CS-CS.	COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING
BIG IDEA	SC.35.CS-CS.1.	Modeling and simulations

BENCHMARK	SC.35.C S-CS.1.3	Answer a question, individually and collaboratively, using data from a simulation.

BODY OF KNOWLEDGE	FL.SC.35. CS-CS.	COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING
BIG IDEA	**SC.35.C S-CS.2.**	**Problem solving and Algorithms**
BENCHMARK	SC.35.C S-CS.2.2	Describe how computational thinking can be used to solve real life issues in science and engineering.
BENCHMARK	SC.35.C S-CS.2.4	Solve real-world problems in science and engineering using computational thinking skills.
BENCHMARK	SC.35.C S-CS.2.6	Write an algorithm to solve a grade-level appropriate problem (e.g., move a character through a maze, instruct a character to draw a specific shape, have a character start, repeat or end activity as required or upon a specific event), individually or collaboratively.

BODY OF KNOWLEDGE	FL.SC.35. CS-CP.	COMPUTER SCIENCE - COMPUTER PRACTICES AND PROGRAMMING
BIG IDEA	**SC.35.C S-CP.2.**	**Computer programming basics**
BENCHMARK	SC.35.C S-CP.2.2	Create, test, and modify a program in a graphical environment (e.g., block-based visual programming language), individually and collaboratively.

BODY OF KNOWLEDGE	FL.SC.68. CS-CS.	COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING
BIG IDEA	**SC.68.C S-CS.2.**	**Problem solving and Algorithms**
BENCHMARK	SC.68.C S-CS.2.2	Solve real-life issues in science and engineering (i.e., generalize a solution to open-ended problems) using computational thinking skills.
BENCHMARK	SC.68.C S-CS.2.5	Decompose a problem and create a function for one of its parts at a time (e.g., video game, robot obstacle course, making dinner), individually and collaboratively.
BENCHMARK	SC.68.C S-CS.2.6	Create a program that implements an algorithm to achieve a given goal, individually and collaboratively.

STRAND/TOPIC		6th Grade
STANDARD / DESCRIPTION		**NUMERICAL REASONING – multiplication and division of whole numbers and fractions, and all four operations with decimal numbers**
ELEMENT	**6.NR.4:**	**Solve a variety of contextual problems involving ratios, unit rates, equivalent ratios, percentages, and conversions within measurement systems using proportional reasoning.**

ELEMENT/GLE	6.NR.4.2.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

ELEMENT/GLE	6.NR.4.3.	Solve problems involving proportions using a variety of student-selected strategies.

Georgia Standards of Excellence
Science
Grade **6** - Adopted: **2016**

STRAND/TOPIC		Earth and Space Science
STANDARD / DESCRIPTION	S6E6.	Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.

ELEMENT	S6E6.b.	Design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.

Georgia Standards of Excellence
Technology Education
Grade **5** - Adopted: **2019**

STRAND/TOPIC		Computer Science Fifth Grade (11.07800)
STANDARD / DESCRIPTION		Knowledge Constructor
ELEMENT	CSS.KC. 3-5.2.	Curate (analyze and evaluate) a variety of resources and digital tools to construct knowledge and produce creative artifacts.

ELEMENT/GLE	CSS.KC. 3-5.2.3.	Explain why a real-world issue exists or was created and develop a possible solution.

STRAND/TOPIC		Computer Science Fifth Grade (11.07800)
STANDARD / DESCRIPTION		Global Collaborator
ELEMENT	CSS.GC .3-5.7.	Use digital tools to expand personal viewpoints and enrich learning by collaborating effectively both locally and globally.

ELEMENT/GLE	CSS.GC. 3-5.7.2.	Plan the development of a program by including others' viewpoints and considering user preferences.

STRAND/TOPIC		Computer Science Fifth Grade (11.07800)
STANDARD / DESCRIPTION		Reflective Researcher
ELEMENT	CSS.RR. 3-5.8.	Gather, evaluate, and organize quality information from multiple sources.

ELEMENT/GLE	CSS.RR. 3-5.8.3.	Use information from multiple sources to identify real-world issues and create solutions.

Georgia Standards of Excellence
Technology Education
Grade **6** - Adopted: **2019**

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Innovative Designer and Creator

ELEMENT	CSS.IDC .6-8.18.	Recognize that there may be multiple approaches to solving a problem.
ELEMENT	CSS.IDC .6-8.19.	Approach problem solving iteratively, using a cyclical process.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Innovative Designer and Creator
ELEMENT	CSS.IDC .6-8.20.	Design, develop, debug and implement computer programs.

ELEMENT/GLE	CSS.IDC. 6-8.20.5.	Implement a simple algorithm in a computer program.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Recognizing and Defining Computational Problems

ELEMENT/GLE	CSS.CT. 6-8.30.	Identify sub-problems to consider while addressing a larger problem.
ELEMENT/GLE	CSS.CT. 6-8.31.	Recognize when it is appropriate to solve a problem computationally; Make sense of computational problems and persevere in solving them.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Recognizing and Defining Computational Problems
ELEMENT/GLE	CSS.CT. 6-8.33.	Utilize computational thinking to solve problems.

EXPECTATION	CSS.CT. 6-8.33.3.	Analyze the problem-solving process, the input-process-output-storage model of a computer, and how computers help humans solve problems.
EXPECTATION	CSS.CT. 6-8.33.4.	Develop an algorithm to decompose a problem of a daily task.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Recognizing and Defining Computational Problems

ELEMENT/GLE	CSS.CT. 6-8.34.	Recognize when to use the same solution for multiple problems.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Computational Thinker

ELEMENT		Conceptual Category: Algorithms
ELEMENT/GLE	CSS.CT. 6-8.36.	Understand and use the basic steps in algorithmic problem solving in computing and other authentic applications.
EXPECTATION	CSS.CT. 6-8.36.1.	Select basic steps to solve algorithmic problems.
EXPECTATION	CSS.CT. 6-8.36.2.	Evaluate basic steps of algorithmic problem solving to design solutions.
EXPECTATION	CSS.CT. 6-8.36.3.	Solve algorithmic problems of increasing complexity.

STRAND/TOPIC		Middle School Computer Science II (11.04000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Recognizing and Defining Computational Problems
ELEMENT/GLE	CSS.CT. 6-8.33.	Utilize computational thinking to solve problems.
EXPECTATION	CSS.CT. 6-8.33.3.	Analyze the problem-solving process, the input-process-output-storage model of a computer, and how computers help humans solve problems.
EXPECTATION	CSS.CT. 6-8.33.4.	Develop an algorithm to decompose a problem of a daily task.

STRAND/TOPIC		Middle School Computer Science II (11.04000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Recognizing and Defining Computational Problems
ELEMENT/GLE	CSS.CT. 6-8.34.	Recognize when to use the same solution for multiple problems.

STRAND/TOPIC		Middle School Computer Science II (11.04000)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT		Conceptual Category: Algorithms
ELEMENT/GLE	CSS.CT. 6-8.36.	Understand and use the basic steps in algorithmic problem solving in computing and other authentic applications.
EXPECTATION	CSS.CT. 6-8.36.1.	Select basic steps to solve algorithmic problems.
EXPECTATION	CSS.CT. 6-8.36.2.	Evaluate basic steps of algorithmic problem solving to design solutions.
EXPECTATION	CSS.CT. 6-8.36.3.	Solve algorithmic problems of increasing complexity.

STRAND/TOPIC		Middle School Computer Science II (11.04000)

STANDARD / DESCRIPTION		Creative Communicator
ELEMENT		Conceptual Category: Collaborating Around Computing
ELEMENT/GLE	CSS.CT. 6-8.41.	Use online resources to participate in collaborative activities for the purpose of developing solutions or products.

Grade **6** - Adopted: **2018**

STRAND/TOPIC		Foundations of Secure Information Systems (MS-CS-FSIS) (11.01100)
STANDARD / DESCRIPTION	MS-CS-FSIS-1.	Demonstrate employability skills required by business and industry to explore, research, and present careers in information technology.
ELEMENT	MS-CS-FSIS-1.4.	Exhibit critical thinking and problem-solving skills to locate, analyze, and apply information in career planning and employment situations.

STRAND/TOPIC		Foundations of Secure Information Systems (MS-CS-FSIS) (11.01100)
STANDARD / DESCRIPTION	MS-CS-FSIS-3.	Develop through application logical observations relative to computational thinking procedures to analyze and solve problems current to everyday life.
ELEMENT	MS-CS-FSIS-3.1.	Identify characteristics of computational thinking (decomposition, pattern recognition, algorithmic thinking, and abstraction).
ELEMENT	MS-CS-FSIS-3.2.	Explain issues and analyze routine hardware and software problems current to everyday life.

STRAND/TOPIC		Foundations of Computer Programming (MS-CS-FCP) (11.01200)
STANDARD / DESCRIPTION	MS-CS-FCP-1.	Demonstrate employability skills required by business and industry and explore, research, and present careers in information technology.
ELEMENT	MS-CS-FCP-1.4.	Exhibit critical thinking and problem-solving skills to locate, analyze, and apply information in career planning and employment situations.

STRAND/TOPIC		Foundations of Computer Programming (MS-CS-FCP) (11.01200)
STANDARD / DESCRIPTION	MS-CS-FCP-3.	Utilize computational thinking to solve problems.
ELEMENT	MS-CS-FCP-3.3.	Analyze the problem-solving process, the input-process-output-storage model of a computer, and how computers help humans solve problems.
ELEMENT	MS-CS-FCP-3.4.	Develop an algorithm to decompose a problem of a daily task.

STRAND/TOPIC		Foundations of Computer Programming (MS-CS-FCP) (11.01200)
STANDARD / DESCRIPTION	MS-CS-FCP-4.	Design, develop, debug and implement computer programs.
ELEMENT	MS-CS-FCP-4.5.	Implement a simple algorithm in a computer program.

STRAND/TOPIC		Foundations of Interactive Design (MS-CS-FID) (11.01300)
STANDARD / DESCRIPTION	MS-CS-FID-1.	Demonstrate employability skills required by business and industry and explore, research, and present careers in information technology.

| ELEMENT | MS-CS-FID-1.4. | Exhibit critical thinking and problem-solving skills to locate, analyze, and apply information in career planning and employment situations. |

Hawaii Content and Performance Standards
Mathematics
Grade **5** - Adopted: **2010**

CONTENT STANDARD / COURSE	HI.CC.MP.5.	Mathematical Practices
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.1.	Make sense of problems and persevere in solving them.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.2.	Reason abstractly and quantitatively.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.3.	Construct viable arguments and critique the reasoning of others.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.4.	Model with mathematics.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.5.	Use appropriate tools strategically.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.5.7.	Look for and make use of structure.

Hawaii Content and Performance Standards
Mathematics
Grade **6** - Adopted: **2010**

CONTENT STANDARD / COURSE	HI.CC.MP.6.	Mathematical Practices
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.6.1.	Make sense of problems and persevere in solving them.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.6.2.	Reason abstractly and quantitatively.

STANDARD / PERFORMANC E INDICATOR / DOMAIN	MP.6.3.	Construct viable arguments and critique the reasoning of others.

STANDARD / PERFORMANC E INDICATOR / DOMAIN	MP.6.4.	Model with mathematics.

STANDARD / PERFORMANC E INDICATOR / DOMAIN	MP.6.5.	Use appropriate tools strategically.

STANDARD / PERFORMANC E INDICATOR / DOMAIN	MP.6.7.	Look for and make use of structure.

CONTENT STANDARD / COURSE	HI.CC.RP. 6.	**Ratios and Proportional Relationships**
STANDARD / PERFORMANC E INDICATOR / DOMAIN		**Understand ratio concepts and use ratio reasoning to solve problems.**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK	**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.**

EXPECTATION / TOPIC	RP.6.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD / COURSE	HI.CC.EE. 6.	**Expressions and Equations**
STANDARD / PERFORMANC E INDICATOR / DOMAIN		**Reason about and solve one-variable equations and inequalities.**

INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK	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.

Hawaii Content and Performance Standards
Science
Grade **5** - Adopted: **2016**

CONTENT STANDARD / COURSE	NGSS.5- LS.	**LIFE SCIENCE**
STANDARD / PERFORMANC E INDICATOR / DOMAIN	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**

INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

CONTENT STANDARD / COURSE	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
STANDARD / PERFORMANCE INDICATOR / DOMAIN	5-ESS3.	Earth and Human Activity
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CONTENT STANDARD / COURSE	NGSS.3-5-ETS.	ENGINEERING DESIGN
STANDARD / PERFORMANCE INDICATOR / DOMAIN	3-5-ETS1.	Engineering Design
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	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.
EXPECTATION / TOPIC	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.
EXPECTATION / TOPIC	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.

Hawaii Content and Performance Standards
Science
Grade **6** - Adopted: **2016**

CONTENT STANDARD / COURSE	NGSS.MS-LS.	LIFE SCIENCE
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	MS-LS2- 5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD / COURSE	NGSS.MS -ESS.	EARTH AND SPACE SCIENCE
STANDARD / PERFORMANC E INDICATOR / DOMAIN	MS- ESS3.	Earth and Human Activity
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	MS- ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

EXPECTATION / TOPIC	MS- ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

CONTENT STANDARD / COURSE	NGSS.MS -ETS.	ENGINEERING DESIGN
STANDARD / PERFORMANC E INDICATOR / DOMAIN	MS- ETS1.	Engineering Design
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		Students who demonstrate understanding can:

EXPECTATION / TOPIC	MS- ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

EXPECTATION / TOPIC	MS- ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

EXPECTATION / TOPIC	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.