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

How Wind Turbines Capture Kinetic Energy

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.

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.

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.

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.6-8.9.	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		**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.
RELATED CONTENT / EXPECTATION	5.1.7.	Identify variables.
RELATED CONTENT / EXPECTATION	5.1.8.	Demonstrate that programs require known starting values that may need to be updated appropriately during the execution of programs.

STRAND / DOMAIN	**AL.DLCS.5.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**5.4.**	**Computing Analyst**
STANDARD		**Modeling and Simulations**
RELATED CONTENT / EXPECTATION	5.4.25.	Analyze the concepts, features, and behaviors illustrated by a simulation.
RELATED CONTENT / EXPECTATION	5.4.26.	Connect data from a simulation to real-life events.

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		**Algorithms**
RELATED CONTENT / EXPECTATION	6.1.3.	Create pseudocode that uses conditionals.

STRAND / DOMAIN	**AL.DLCS.6.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**6.1.**	**Computational Thinker**
STANDARD		**Programming and Development**
RELATED CONTENT / EXPECTATION	6.1.8.	Create a program that initializes a variable.

STRAND / DOMAIN	**AL.DLCS.6.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**6.4.**	**Computing Analyst**
STANDARD		**Modeling and Simulations**
RELATED CONTENT / EXPECTATION	6.4.26.	Explain why professionals may use models as logical representations of physical, mathematical, or logical systems or processes.
RELATED CONTENT / EXPECTATION	6.4.27.	Explain how simulations serve to implement models.

Alaska Content and Performance Standards

Mathematics

Grade **5** - 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.

PERFORMANCE / CONTENT STANDARD	**AK.5.MD.**	**Measurement and Data**
GRADE LEVEL EXPECTATION / STRAND		**Represent and interpret data.**
GOAL	5.MD.3.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

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.

Alaska Content and Performance Standards

Science

Grade **5** - Adopted: **2019**

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.

Alaska Content and Performance Standards

Science

Grade **6** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL PHYSICAL SCIENCES
GRADE LEVEL EXPECTATION / STRAND		**Energy**
GOAL	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
GOAL	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		**Earth's Systems**
GOAL	MS-ESS3-1.	Construct an evidence-based explanation for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

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

GOAL	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.
GOAL	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
GOAL	MS-ETS1-3.	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
GOAL	MS-ETS1-4.	Develop a model to generate data for repetitive testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Alaska Content and Performance Standards

Technology Education

Grade **5** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Variables**
INDICATOR	5.AP.V.01.	Create programs that use variables to store and modify grade level appropriate data.

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Modularity**
INDICATOR	5.AP.M.01.	Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Program Development**
INDICATOR	5.AP.PD.01.	Define the concept of abstraction and create increasingly complex programs.
INDICATOR	5.AP.PD.02.	Observe intellectual property rights and give appropriate credit when creating or remixing programs.

PERFORMANCE / CONTENT STANDARD		**Alaska Digital Literacy Standards**

GRADE LEVEL EXPECTATION / STRAND		**Knowledge Construction**
GOAL	3-5.KC.4.	Students explore real-world problems and issues and collaborate with others to find answers or solutions.
PERFORMANCE / CONTENT STANDARD		**Alaska Digital Literacy Standards**
GRADE LEVEL EXPECTATION / STRAND		**Innovative Design**
GOAL	3-5.ID.3.	Students engage in a cyclical design process to develop prototypes and reflect on the role that trial and error plays.
PERFORMANCE / CONTENT STANDARD		**Alaska Digital Literacy Standards**
GRADE LEVEL EXPECTATION / STRAND		**Global Collaboration**
GOAL	3-5.GC.4.	Students work with others using collaborative technologies to explore local and global issues.

Alaska Content and Performance Standards

Technology Education

Grade **6** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Data Analysis**
GOAL		**Inference and Models**
INDICATOR	6.DA.IM.01.	Use models and simulations to formulate, refine, and test hypotheses.
PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Variables**
INDICATOR	6.AP.V.01.	Develop programs that utilize combinations of repetition, conditionals, functions, and the manipulation of variables representing different data types.
PERFORMANCE / CONTENT STANDARD		**Alaska Digital Literacy Standards**
GRADE LEVEL EXPECTATION / STRAND		**Knowledge Construction**

GOAL	6-12.KC.4.	Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

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

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.

PERFORMANCE / CONTENT STANDARD		Alaska Digital Literacy Standards
GRADE LEVEL EXPECTATION / STRAND		Global Collaboration
GOAL	6-12.GC.4.	Students select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues.

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.

STRAND		Measurement and Data (MD)

CONCEPT / STANDARD	**5.MD.B**	**Represent and interpret data.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/8, 1/2, 3/4). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

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.

Arizona's College and Career Ready Standards

Science

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

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.

Arizona's College and Career Ready Standards

Science

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

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		**Physical Sciences: Students develop an understanding of forces and energy and how energy can transfer from one object to another or be converted from one form to another. They also develop an understanding of the nature of matter.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Physical Science Standards**

OBJECTIVE / GRADE LEVEL EXPECTATION	6.P4U2.5.	Analyze how humans use technology to store (potential) and/or use (kinetic) energy.

Arizona's College and Career Ready Standards

Technology Education

Grade **5** - 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	3-5.3.d.	Students, in collaboration with an educator, explore real-world problems and issues and collaborate with others to find answers or solutions.

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.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.4.c.	Students, in collaboration with an educator, engage in a cyclical design process to develop, test and refine prototypes and reflect on the role that trial and error plays.

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.

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.

STRAND		Arizona Educational Technology Standards 2022

CONCEPT / STANDARD	**Standard 7.**	**Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	3-5.7.d.	Students, in collaboration with an educator, work with others, using technology to explore local and global issues and identify possible solutions.

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

STRAND		**Computer Science**
CONCEPT / STANDARD		**Practices**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	**Practice 4.**	**Developing and Using Abstractions: Abstractions are formed by identifying patterns and extracting common features from specific examples to create generalizations. Using generalized solutions and parts of solutions designed for broad reuse simplifies the development process by managing complexity.**
OBJECTIVE / GRADE LEVEL EXPECTATION	4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Algorithms and Programming (AP)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Control (C)**
OBJECTIVE / GRADE LEVEL EXPECTATION	5.AP.C.1.	Create programs that include sequences, events, loops, and conditionals. Practice(s): Creating Computational Artifacts: 5.1

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.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.

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

STRAND		**Arizona Educational Technology Standards 2022**
CONCEPT / STANDARD	**Standard 7.**	**Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	6-8.7.d.	Students work with others, using collaborative technologies to explore local and global issues and investigate and advocate for possible solutions.

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

STRAND		**Computer Science**
CONCEPT / STANDARD		**Practices**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	**Practice 4.**	**Developing and Using Abstractions: Abstractions are formed by identifying patterns and extracting common features from specific examples to create generalizations. Using generalized solutions and parts of solutions designed for broad reuse simplifies the development process by managing complexity.**
OBJECTIVE / GRADE LEVEL EXPECTATION	4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Data and Analysis (DA)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Inference and Models (IM)**
OBJECTIVE / GRADE LEVEL EXPECTATION	6.DA.IM.1.	Discuss the validity of a computational model based on the reliability of the data. Practice(s): Creating Computational Artifacts, Developing and Using Abstractions: 5.3, 4.4

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Algorithms and Programming (AP)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Variables (V)**
OBJECTIVE / GRADE LEVEL EXPECTATION	6.AP.V.1.	Identify variables that represent different data types and perform operations on their values. Practice(s): Creating Computational Artifacts: 5.1, 5.2

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Algorithms and Programming (AP)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Control (C)**
OBJECTIVE / GRADE LEVEL EXPECTATION	6.AP.C.1.	Design programs that combine control structures, including nested loops and compound conditionals. Practice(s): Creating Computational Artifacts: 5.1, 5.2

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.
BENCHMARK / PROFICIENCY	5.DA.2.	Use a line plot to display a data set of measurements in fractions of a unit solving problems involving all four operations with fractions (excluding division of a fraction by fraction) using data presented in line plots.

Arkansas Standards

Mathematics

Grade **6** - Adopted: **2023**

STRAND / TOPIC		**Grade 6 Mathematics Standards**
CONTENT STANDARD	**6.NCC.**	**Number Concepts & Computations**
PERFORMANCE EXPECTATION		**Rational Numbers - Students use fractions, decimals, integers, and absolute values to represent real-world situations.**
BENCHMARK / PROFICIENCY	6.NCC.5.	Convert between fractions, decimals, and percents in real-world and mathematical problems.

Arkansas Standards

Science

Grade **5** - Adopted: **2017**

STRAND / TOPIC	**AR.SC.5.**	**Engineering, Technology, and Applications of Science**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE 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.
PERFORMANCE 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.
PERFORMANCE 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.1.**	**Energy**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	6-PS3-5.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
STRAND / TOPIC	**AR.SC.5.**	**Human Impacts**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE 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:**
PERFORMANCE 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.
PERFORMANCE 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.
PERFORMANCE 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.6-8.9.	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 2: Students will analyze and utilize connections between elements of mathematics and computer science.**
BENCHMARK / PROFICIENCY	CSK8.G5.2.3.	Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps)

STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 3: Students will analyze and utilize data through the use of computing devices.**
BENCHMARK / PROFICIENCY	CSK8.G5.3.3.	Explore various models and simulations (e.g., ecosystems, epidemics) to support research and data analysis

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.G5.6.1.	Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Professionalism and Impacts of Computing**
PERFORMANCE EXPECTATION		**Content Cluster 11: Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information.**
BENCHMARK / PROFICIENCY	CSK8.G5.11.4.	Identify the concepts of causation and correlation

Arkansas Standards

Technology Education

Grade **6** - Adopted: **2020/Beginning 2021**

STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Computational Thinking and Problem Solving**
PERFORMANCE EXPECTATION		**Content Cluster 2: Students will analyze and utilize connections between elements of mathematics and computer science.**
BENCHMARK / PROFICIENCY	CSK8.G6.2.1.	Describe subsets of a sample set identifying unions, intersections, and complements (e.g., describing information sorted with a Venn diagram)
BENCHMARK / PROFICIENCY	CSK8.G6.2.2.	Explore how variables are used to represent data
BENCHMARK / PROFICIENCY	CSK8.G6.2.3.	Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps)
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 3: Students will analyze and utilize data through the use of computing devices.**
BENCHMARK / PROFICIENCY	CSK8.G6.3.3.	Compare problems that can be solved using models and simulations that utilize data analysis
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Professionalism and Impacts of Computing**

PERFORMANCE EXPECTATION		**Content Cluster 11: Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information.**
BENCHMARK / PROFICIENCY	CSK8.G6.11.4.	Utilize data analysis to distinguish between causation and correlation

California Content Standards

Mathematics

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

CONTENT STANDARD / DOMAIN / PART	CA.CC.MP.	Standards for Mathematical Practice
PERFORMANCE STANDARD / MODE	MP.1.	Make sense of problems and persevere in solving them.
PERFORMANCE 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.
CONTENT STANDARD / DOMAIN / PART	**CA.CC.5.MD.**	**Measurement and Data**
PERFORMANCE STANDARD / MODE		**Represent and interpret data.**
EXPECTATION / SUBSTRAND	5.MD.2.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

California Content Standards

Mathematics

Grade **6** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	CA.CC.MP.	Standards for Mathematical Practice
PERFORMANCE STANDARD / MODE	MP.1.	Make sense of problems and persevere in solving them.

PERFORMANCE 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.

California Content Standards

Science

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

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-PS.	PHYSICAL SCIENCE
PERFORMANCE STANDARD / MODE	**MS-PS3.**	**Energy**
EXPECTATION / SUBSTRAND		**Students who demonstrate understanding can:**
FOUNDATION / PROFICIENCY LEVEL	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

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.6-8.9.	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**
PERFORMANCE STANDARD / 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 STANDARD / DOMAIN / PART	**CA.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
PERFORMANCE STANDARD / MODE		**Text Types and Purposes**
EXPECTATION / SUBSTRAND	**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 STANDARD / DOMAIN / PART	**CA.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
PERFORMANCE STANDARD / 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 STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it.
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P6.**	**Core Practice 6 – Testing and Refining Computational Artifacts**
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.
EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Variables**
EXPECTATION / SUBSTRAND	3-5.AP.11.	Create programs that use variables to store and modify data. (P5.2)
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Control**
EXPECTATION / SUBSTRAND	3-5.AP.12.	Create programs that include events, loops, and conditionals. (P5.2)

California Content Standards

Technology Education

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

CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**

PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it.
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P6.**	**Core Practice 6 – Testing and Refining Computational Artifacts**
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.
EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.
CONTENT STANDARD / DOMAIN / PART		**Data & Analysis**
PERFORMANCE STANDARD / MODE		**Inference & Models**
EXPECTATION / SUBSTRAND	6-8.DA.9.	Test and analyze the effects of changing variables while using computational models. (P4.4, P6.1)
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Variables**
EXPECTATION / SUBSTRAND	6-8.AP.11.	Create clearly named variables that store data, and perform operations on their contents. (P5.1, P5.2)
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Control**
EXPECTATION / SUBSTRAND	6-8.AP.12.	Design and iteratively develop programs that combine control structures and use compound conditions. (P5.1, P5.2)

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.

CONTENT AREA		Fifth Grade, Standard 3. Data, Statistics, and Probability
STANDARD	**5.MD.B.**	**Measurement & Data: Represent and interpret data.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES	5.MD.B.2.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. (CCSS: 5.MD.B.2)

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.

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.

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.1.**	**Physical Science**
STANDARD	**SC.MS.1.5.**	**Kinetic energy can be distinguished from the various forms of potential energy.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.1.5.a.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and the speed of an object. (MS-PS3-1)
INDICATOR	SC.MS.1.5.e.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. (MS-PS3–5)

CONTENT AREA	**SC.MS.1.**	**Physical Science**
STANDARD	**SC.MS.1.6.**	**Energy changes to and from each type can be tracked through physical or chemical interactions. The relationship between the temperature and the total energy of a system depends on the types, states and amounts of matter.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.1.6.c.	Construct, use, and present arguments to support the claim that when kinetic energy of an object changes, energy is transferred to or from the object. (MS-PS3-5)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.8.**	**Humans depend on Earth's land, ocean, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.8.a.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. (MS-ESS3-1)

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.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.

DOMAIN / CONTENT STANDARD	**CT.CC.MD.5.**	**Measurement and Data**
STATE FRAMEWORK		**Represent and interpret data.**

GRADE LEVEL EXPECTATION	MD.5.2.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

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.

Connecticut State Standards

Science

Grade **5** - Adopted: **2015**

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-PS.	PHYSICAL SCIENCE

STATE FRAMEWORK	**MS-PS3.**	**Energy**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
INDICATOR	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
INDICATOR	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.
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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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-NI.**	**Networks & The Internet**
INDICATOR		**Cybersecurity**

INDICATOR	1B-NI-05.	Discuss real-world cybersecurity problems and how personal information can be protected. (P3.1)

DOMAIN / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
STATE FRAMEWORK	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
GRADE LEVEL EXPECTATION	**1B-AP.**	**Algorithms & Programming**
INDICATOR		**Variables**
INDICATOR	1B-AP-09.	Create programs that use variables to store and modify data. (P5.2)

DOMAIN / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
STATE FRAMEWORK	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
GRADE LEVEL EXPECTATION	**1B-AP.**	**Algorithms & Programming**
INDICATOR		**Control**
INDICATOR	1B-AP-10.	Create programs that include sequences, events, loops, and conditionals. (P5.2)

DOMAIN / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
STATE FRAMEWORK	**CSTA.1 B.**	**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)

DOMAIN / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
STATE FRAMEWORK	**CSTA.1 B.**	**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)

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.
GRADE LEVEL EXPECTATION	ISTE-S.4.c.	Develop, test and refine prototypes as part of a cyclical design process.

DOMAIN / CONTENT STANDARD		**ISTE for Students (ISTE-S)**
STATE FRAMEWORK	**CO.ISTE-S.6.**	**Creative Communicators: 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.**
GRADE LEVEL EXPECTATION	ISTE-S.6.c.	Communication complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

DOMAIN / CONTENT STANDARD		**ISTE for Students (ISTE-S)**
STATE FRAMEWORK	**CO.ISTE-S.7.**	**Global Collaborators: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
GRADE LEVEL EXPECTATION	ISTE-S.7.b.	Use collaborative technologies to work with others, including peers, experts, or community members to examine issues and problems from multiple viewpoints.
GRADE LEVEL EXPECTATION	ISTE-S.7.d.	Explore local and global issues and use collaborative technologies to work with others to investigate 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-DA.**	**Data & Analysis**
INDICATOR		**Inference & Models**
INDICATOR	2-DA-09.	Refine computational models based on the data they have generated. (P5.3, P4.4)

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		**Variables**
INDICATOR	2-AP-11.	Create clearly named variables that represent different data types and perform operations on their values. (P5.1, P5.2)

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		**Control**
INDICATOR	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P5.1, P5.2)

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-AP.**	**Algorithms & Programming**
INDICATOR		**Program Development**
INDICATOR	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P2.2)

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)

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		Safety, Law, & Ethics
INDICATOR	2-IC-23.	Describe tradeoffs between allowing information to be public and keeping information private and secure. (P7.2)

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.
GRADE LEVEL EXPECTATION	ISTE-S.4.c.	Develop, test and refine prototypes as part of a cyclical design process.

DOMAIN / CONTENT STANDARD		ISTE for Students (ISTE-S)
STATE FRAMEWORK	CO.ISTE-S.6.	Creative Communicators: 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.

GRADE LEVEL EXPECTATION	ISTE-S.6.c.	Communication complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.
DOMAIN / CONTENT STANDARD		**ISTE for Students (ISTE-S)**
STATE FRAMEWORK	**CO.ISTE-S.7.**	**Global Collaborators: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
GRADE LEVEL EXPECTATION	ISTE-S.7.b.	Use collaborative technologies to work with others, including peers, experts, or community members to examine issues and problems from multiple viewpoints.
GRADE LEVEL EXPECTATION	ISTE-S.7.d.	Explore local and global issues and use collaborative technologies to work with others to investigate 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.
STANDARD / STRAND	**DE.CC.5.MD.**	**Measurement and Data**
STRAND / INDICATOR		**Represent and interpret data.**
ENDURING UNDERSTANDING	CC.5.MD.2.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

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.

Delaware Standards and Instruction

Science

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

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-PS.**	**PHYSICAL SCIENCE**
STRAND / INDICATOR	**MS-PS3.**	**Energy**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
BENCHMARK	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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/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/TS2d.	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-NI.**	**Networks & The Internet**
BENCHMARK		**Cybersecurity**

EXPECTATION	1B-NI-05.	Discuss real-world cybersecurity problems and how personal information can be protected. (P3.1)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
ENDURING UNDERSTANDING	**1B-AP.**	**Algorithms & Programming**
BENCHMARK		**Variables**
EXPECTATION	1B-AP-09.	Create programs that use variables to store and modify data. (P5.2)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
ENDURING UNDERSTANDING	**1B-AP.**	**Algorithms & Programming**
BENCHMARK		**Control**
EXPECTATION	1B-AP-10.	Create programs that include sequences, events, loops, and conditionals. (P5.2)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1 B.**	**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)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.1 B.**	**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)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTANDING	2-DA.	Data & Analysis
BENCHMARK		Inference & Models
EXPECTATION	2-DA-09.	Refine computational models based on the data they have generated. (P5.3, P4.4)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTANDING	2-AP.	Algorithms & Programming
BENCHMARK		Variables
EXPECTATION	2-AP-11.	Create clearly named variables that represent different data types and perform operations on their values. (P5.1, P5.2)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTANDING	2-AP.	Algorithms & Programming
BENCHMARK		Control
EXPECTATION	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P5.1, P5.2)

STANDARD / STRAND		Computer Science Content Standards
STRAND / INDICATOR	CSTA.2.	Level 2 (Ages 11-14)
ENDURING UNDERSTANDING	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 UNDERSTANDING	**2-AP.**	**Algorithms & Programming**
BENCHMARK		**Program Development**
EXPECTATION	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P2.2)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.2.**	**Level 2 (Ages 11-14)**
ENDURING UNDERSTANDING	**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)

STANDARD / STRAND		**Computer Science Content Standards**
STRAND / INDICATOR	**CSTA.2.**	**Level 2 (Ages 11-14)**
ENDURING UNDERSTANDING	**2-IC.**	**Impacts of Computing**
BENCHMARK		**Safety, Law, & Ethics**
EXPECTATION	2-IC-23.	Describe tradeoffs between allowing information to be public and keeping information private and secure. (P7.2)

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.2.1e	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.

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.5.1c	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		**Data Analysis and Probability**
BIG IDEA		**Standard 1: Collect, represent and interpret data and find the mean, mode, median or range of a data set.**
BENCHMARK	MA.5.DP.1.1.	Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots.

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.2.1e	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.
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.5.1c	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		**Number Sense and Operations**
BIG IDEA		**Standard 3: Apply properties of operations to rewrite numbers in equivalent forms.**
BENCHMARK	MA.6.NSO.3.5.	Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals and percentages.
BODY OF KNOWLEDGE		**Data Analysis and Probability**
BIG IDEA		**Standard 1: Develop an understanding of statistics and determine measures of center and measures of variability. Summarize statistical distributions graphically and numerically.**
BENCHMARK	MA.6.DP.1.4.	Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range.

Florida Standards

Science

Grade **5** - Adopted: **2008**

BODY OF KNOWLEDGE	**FL.SC.5.P.**	**Physical Science**
BIG IDEA	**SC.5.P.10.**	**Forms of Energy - A. Energy is involved in all physical processes and is a unifying concept in many areas of science. B. Energy exists in many forms and has the ability to do work or cause a change.**
BENCHMARK	SC.5.P.10.1.	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.
BENCHMARK	SC.5.P.10.2.	Investigate and explain that energy has the ability to cause motion or create change.
BENCHMARK	SC.5.P.10.4.	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.

Florida Standards

Science

Grade **6** - Adopted: **2008**

BODY OF KNOWLEDGE	**FL.SC.6.P.**	**Physical Science**

BIG IDEA	**SC.6.P.11.**	**Energy Transfer and Transformations - A. Waves involve a transfer of energy without a transfer of matter. B. Water and sound waves transfer energy through a material. C. Light waves can travel through a vacuum and through matter. D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.**
BENCHMARK	SC.6.P.11.1.	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.

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.CS-CS.1.2	Describe how models and simulations can be used to solve real-world issues in science and engineering.
BENCHMARK	SC.35.CS-CS.1.3	Answer a question, individually and collaboratively, using data from a simulation.
BENCHMARK	SC.35.CS-CS.1.4	Create a simple model of a system (e.g., flower or solar system) and explain what the model shows and does not show.
BODY OF KNOWLEDGE	**FL.SC.35.CS-CP.**	**COMPUTER SCIENCE - COMPUTER PRACTICES AND PROGRAMMING**
BIG IDEA	**SC.35.CS-CP.2.**	**Computer programming basics**
BENCHMARK	SC.35.CS-CP.2.2	Create, test, and modify a program in a graphical environment (e.g., block-based visual programming language), individually and collaboratively.
BENCHMARK	SC.35.CS-CP.2.3	Create a program using arithmetic operators, conditionals, and repetition in programs.

Florida Standards

Technology Education

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

BODY OF KNOWLEDGE	**FL.SC.68.CS-CS.**	**COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING**
BIG IDEA	**SC.68.CS-CS.1.**	**Modeling and simulations**
BENCHMARK	SC.68.CS-CS.1.1	Examine connections between elements of mathematics and computer science including binary numbers, logic, sets, and functions.
BENCHMARK	SC.68.CS-CS.1.2	Create or modify and use a simulation to analyze and illustrate a concept in depth (i.e., use a simulation to illustrate a genetic variation), individually and collaboratively.
BENCHMARK	SC.68.CS-CS.1.3	Evaluate what kinds of real-world problems can be solved using modeling and simulation.

BENCHMARK	SC.68.CS-CS.1.4	Interact with content-specific models and simulations to support learning, research and problem solving (e.g., immigration, international trade, invasive species).
BODY OF KNOWLEDGE	**FL.SC.68.CS-CS.**	**COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING**
BIG IDEA	**SC.68.CS-CS.2.**	**Problem solving and Algorithms**
BENCHMARK	SC.68.CS-CS.2.7	Design solutions that use repetition and two-way selection (e.g., for, while, if/else).
BODY OF KNOWLEDGE	**FL.SC.68.CS-CP.**	**COMPUTER SCIENCE - COMPUTER PRACTICES AND PROGRAMMING**
BIG IDEA	**SC.68.CS-CP.2.**	**Computer programming basics**
BENCHMARK	SC.68.CS-CP.2.3	Develop problem solutions using a block programming language, including all of the following: looping behavior, conditional statements, expressions, variables, and functions.
BENCHMARK	SC.68.CS-CP.2.4	Develop problem solutions using a programming language, including all of the following: looping behavior, conditional statements, expressions, variables, and functions.

Georgia Standards of Excellence

Science

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

STRAND/TOPIC		**Physical Science**
STANDARD / DESCRIPTION	**S5P2.**	**Obtain, evaluate, and communicate information to investigate electricity.**
ELEMENT	S5P2.a.	Obtain and combine information from multiple sources to explain the difference between naturally occurring electricity (static) and human-harnessed electricity.

Georgia Standards of Excellence

Science

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

STRAND/TOPIC		**Earth and Space Science**
STANDARD / DESCRIPTION	**S6E4.**	**Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather.**
ELEMENT	S6E4.d.	Construct an explanation of the relationship between air pressure, weather fronts, and air masses and meteorological events such as tornados and thunderstorms.
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.a.	Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.

Georgia Standards of Excellence

Technology Education

Grade **5** - Adopted: **2019**

STRAND/TOPIC		Computer Science Fifth Grade (11.07800)
STANDARD / DESCRIPTION		Innovative Designer and Creator
ELEMENT	CSS.IDC.3-5.4.	Use a variety of technologies within a design process to identify and solve problems by creating new, useful, or imaginative solutions.
ELEMENT/GLE	CSS.IDC.3-5.4.1.	Explore and practice a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

STRAND/TOPIC		Computer Science Fifth Grade (11.07800)
STANDARD / DESCRIPTION		Computational Thinker
ELEMENT	CSS.CT.3-5.5.	Develop and employ strategies for understanding and solving problems in ways that use the power of technological methods to develop and test solutions.
ELEMENT/GLE	CSS.CT.3-5.5.4.	Create programs that include sequences, events, loops, conditionals, and variables.

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.3-5.7.5.	Seek diverse perspectives for the purpose of improving computational artifacts.

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.6-8.20.	Design, develop, debug and implement computer programs.
ELEMENT/GLE	CSS.IDC.6-8.20.2.	Utilize the design process to brainstorm, implement, test, and revise an ide
ELEMENT/GLE	CSS.IDC.6-8.20.7.	Create a program that accepts user and/or sensor input and stores the result in a variable.
ELEMENT/GLE	CSS.IDC.6-8.20.8.	Create a computer program that implements a loop.

STRAND/TOPIC		Middle School Computer Science I (11.03000)
STANDARD / DESCRIPTION		Innovative Designer and Creator
ELEMENT	CSS.IDC.6-8.29.	Create digital artifacts to address a current issue requiring resolution.

ELEMENT/GLE	CSS.IDC. 6-8.29.4.	Develop a program for creative expression or to satisfy personal curiosity which may have visual, audible, and/or tactile results.
ELEMENT/GLE	CSS.IDC. 6-8.29.5.	Develop a program specifically with the goal of solving a problem, creating new knowledge, or helping people, organizations, or society.
STRAND/TOPIC		**Middle School Computer Science I (11.03000)**
STANDARD / DESCRIPTION		**Computational Thinker**
ELEMENT		**Conceptual Category: Programming**
ELEMENT/GLE	**CSS.CT. 6-8.37.**	**Use and compare simple coding control structures (e.g., if-then, loops)**
EXPECTATION	CSS.CT. 6-8.37.2.	Create a program individually and collaboratively using a text-based programming. language; Identify variables and compare the types of data stored as variables.
STRAND/TOPIC		**Middle School Computer Science I (11.03000)**
STANDARD / DESCRIPTION		**Computational Thinker**
ELEMENT		**Conceptual Category: Creating Computational Artifacts**
ELEMENT/GLE	**CSS.CT. 6-8.38.**	**Consider the purpose of computational artifacts for practical use, personal expression, and/or societal impact.**
EXPECTATION	CSS.CT. 6-8.38.3.	Develop problem solutions using a programming language, including all of the following: looping behavior, conditional statements, expressions, variables, and functions.
STRAND/TOPIC		**Middle School Computer Science II (11.04000)**
STANDARD / DESCRIPTION		**Digital Citizen**
ELEMENT	**CSS.DC. 6-8.8.**	**Investigate and identify the basic components of computers and networks.**
ELEMENT/GLE	CSS.DC. 6-8.8.6.	Demonstrate an understanding of the fundamental concepts for how computers process programming commands (hex, binary language, sequence of commands, conditional structures, looping structures).
STRAND/TOPIC		**Middle School Computer Science II (11.04000)**
STANDARD / DESCRIPTION		**Computational Thinker**
ELEMENT		**Conceptual Category: Programming**
ELEMENT/GLE	**CSS.CT. 6-8.37.**	**Use and compare simple coding control structures (e.g., if-then, loops)**
EXPECTATION	CSS.CT. 6-8.37.2.	Create a program individually and collaboratively using a text-based programming. language; Identify variables and compare the types of data stored as variables.
STRAND/TOPIC		**Middle School Computer Science II (11.04000)**
STANDARD / DESCRIPTION		**Computational Thinker**
ELEMENT		**Conceptual Category: Creating Computational Artifacts**

ELEMENT/GLE	**CSS.CT.6-8.38.**	**Consider the purpose of computational artifacts for practical use, personal expression, and/or societal impact.**
EXPECTATION	CSS.CT.6-8.38.3.	Develop problem solutions using a programming language, including all of the following: looping behavior, conditional statements, expressions, variables, and functions.

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

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-4.2.	Utilize the design process to brainstorm, implement, test, and revise an idea.
ELEMENT	MS-CS-FCP-4.4.	Design a user interface and test with other users using a paper prototype.
ELEMENT	MS-CS-FCP-4.7.	Create a program that accepts user and/or sensor input and stores the result in a variable.
ELEMENT	MS-CS-FCP-4.8.	Create a computer program that implements a loop.
ELEMENT	MS-CS-FCP-4.9.	Develop a program that makes a decision based on data or user input.

STRAND/TOPIC		**Foundations of Computer Programming (MS-CS-FCP) (11.01200)**
STANDARD / DESCRIPTION	**MS-CS-FCP-5.**	**Explore the relationship between computer hardware and software.**
ELEMENT	MS-CS-FCP-5.5.	Design a computer program that senses something in the real world and changes an output based on the input.

STRAND/TOPIC		**Foundations of Computer Programming (MS-CS-FCP) (11.01200)**
STANDARD / DESCRIPTION	**MS-CS-FCP-6.**	**Create digital artifacts to address a current issue requiring resolution.**
ELEMENT	MS-CS-FCP-6.2.	Collaborate as a team to develop an artifact that represents multiple perspectives regarding a global crisis.
ELEMENT	MS-CS-FCP-6.4.	Develop a program for creative expression or to satisfy personal curiosity which may have visual, audible, and/or tactile results.
ELEMENT	MS-CS-FCP-6.5.	Develop a program specifically with the goal of solving a problem, creating new knowledge, or helping people, organizations, or society.

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.
CONTENT STANDARD / COURSE	**HI.CC.MD.5.**	**Measurement and Data**
STANDARD / PERFORMANCE INDICATOR / DOMAIN		**Represent and interpret data.**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK	MD.5.2.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

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 / PERFORMANCE INDICATOR / DOMAIN	MP.6.3.	Construct viable arguments and critique the reasoning of others.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.6.4.	Model with mathematics.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.6.5.	Use appropriate tools strategically.

Hawaii Content and Performance Standards

Science

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

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-PS.**	**PHYSICAL SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-PS3.**	**Energy**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**
EXPECTATION / TOPIC	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

EXPECTATION / TOPIC	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.
CONTENT STANDARD / COURSE	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**
EXPECTATION / TOPIC	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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 / PERFORMANCE 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.