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: 7, 8, Key Stage 3

Forward Education

Wildfire detection with Autonomous Vehicles

Alabama Courses of Study

Mathematics

Grade **7** - 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	MP6	Attend to precision.
OBJECTIVE / CATEGORY	MP7	Look for and make use of structure.
OBJECTIVE / CATEGORY	MP8	Look for and express regularity in repeated reasoning.

STRAND / DOMAIN		Grade 7 Content Standards
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.**
RELATED CONTENT / EXPECTATION	**9.**	**Use variables to represent quantities in real-world or mathematical problems and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities.**
GRADE EXPECTATION	9.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

STRAND / DOMAIN		Grade 7 Accelerated Content Standards
OBJECTIVE / CATEGORY		**Proportional Reasoning**

STANDARD		**Analyze the relationship between proportional and non-proportional situations.**
RELATED CONTENT / EXPECTATION	**6.**	**Interpret y = mx + b as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept.**
GRADE EXPECTATION	6.c.	Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value.
GRADE EXPECTATION	6.d.	Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts. [Grade 8, 9]
STRAND / DOMAIN		**Grade 7 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.**
RELATED CONTENT / EXPECTATION	**18.**	**Use variables to represent quantities in a real-world or mathematical problem and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities.**
GRADE EXPECTATION	18.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
STRAND / DOMAIN		**Grade 7 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.**
RELATED CONTENT / EXPECTATION	19.	Create equations in two variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. Limit to contexts arising from linear functions. [Algebra I with Probability, 12 partial]
STRAND / DOMAIN		**Grade 7 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.**
RELATED CONTENT / EXPECTATION	**21.**	**Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms.**
GRADE EXPECTATION	21.b.	Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem. [Grade 8, 11]
STRAND / DOMAIN		**Grade 7 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Explain, evaluate, and compare functions.**

RELATED CONTENT / EXPECTATION	22.	Identify the effect on the graph of replacing f (x) by f (x) + k, k · f(x), f (kx), and f (x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph using technology, where appropriate. Limit to linear functions. [Algebra I with Probability, 23]

Alabama Courses of Study

Mathematics

Grade **8** - 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	MP6	Attend to precision.
OBJECTIVE / CATEGORY	MP7	Look for and make use of structure.
OBJECTIVE / CATEGORY	MP8	Look for and express regularity in repeated reasoning.

STRAND / DOMAIN		Grade 8 Mathematics Content Standards
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Analyze the relationship between proportional and non-proportional situations.**
RELATED CONTENT / EXPECTATION	**9.**	**Interpret y = mx + b as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept.**
GRADE EXPECTATION	9.c.	Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value.
GRADE EXPECTATION	9.d.	Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts.

STRAND / DOMAIN		Grade 8 Mathematics Content Standards
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Analyze and solve linear equations and systems of two linear equations.**

RELATED CONTENT / EXPECTATION	**11.**	**Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms.**
GRADE EXPECTATION	11.b.	Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem.
STRAND / DOMAIN		**Grade 8 Mathematics Content Standards**
OBJECTIVE / CATEGORY		**Data Analysis, Statistics, and Probability**
STANDARD		**Investigate patterns of association in bivariate data.**
RELATED CONTENT / EXPECTATION	**20.**	**Use a linear model of a real-world situation to solve problems and make predictions.**
GRADE EXPECTATION	20.a.	Describe the rate of change and y-intercept in the context of a problem using a linear model of a real-world situation.
STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts – in particular, contexts that arise in relation to linear, quadratic, and exponential situations.**
RELATED CONTENT / EXPECTATION	14.	Create equations in two or more variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions. [Algebra I with Probability, 12]
STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities – including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).**
RELATED CONTENT / EXPECTATION	**20.**	**Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x).**
GRADE EXPECTATION	20.a.	Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. [Algebra I with Probability, 19] Note: Include cases where f(x) is linear, quadratic, exponential, or absolute value functions and g(x) is constant or linear.
STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.**
RELATED CONTENT / EXPECTATION	**26.**	**Distinguish between situations that can be modeled with linear functions and those that can be modeled with exponential functions.**

GRADE EXPECTATION	26.b.	Define linear functions to represent situations in which one quantity changes at a constant rate per unit interval relative to another.

STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.**
RELATED CONTENT / EXPECTATION	29.	Interpret the parameters of functions in terms of a context. Extend from linear functions, written in the form mx + b, to exponential functions, written in the form ab^x. [Algebra I with Probability, 27]

STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.**
RELATED CONTENT / EXPECTATION	**32.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
GRADE EXPECTATION	32.a.	Graph linear and quadratic functions and show intercepts, maxima, and minima.

STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Algebra and Functions**
STANDARD		**Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.**
RELATED CONTENT / EXPECTATION	33.	Use the mathematical modeling cycle to solve real-world problems involving linear, quadratic, exponential, absolute value, and linear piecewise functions. [Algebra I with Probability, 31]

STRAND / DOMAIN		**Grade 8 Accelerated Content Standards**
OBJECTIVE / CATEGORY		**Data Analysis, Statistics, and Probability**
STANDARD		**Investigate patterns of association in bivariate data.**
RELATED CONTENT / EXPECTATION	**36.**	**Use a linear model of a real-world situation to solve problems and make predictions.**
GRADE EXPECTATION	36.a.	Describe the rate of change and y-intercept in the context of a problem using a linear model of a real-world situation. [Grade 8, 20]

STRAND / DOMAIN	**AL.7.LS.**	**LIFE SCIENCE**
OBJECTIVE / CATEGORY		**Ecosystems: Interactions, Energy, and Dynamics**
STANDARD	7.LS.7.	Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (e.g., deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations.
STANDARD	7.LS.9.	Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g., using scientific, economic, and social considerations regarding purifying water, recycling nutrients, preventing soil erosion).

Grade **7** - 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

Science

Grade **8** - 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 **7** - Adopted: **2018**

STRAND / DOMAIN	**AL.DLCS.7.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**7.1.**	**Computational Thinker**
STANDARD		**Algorithms**
RELATED CONTENT / EXPECTATION	7.1.2.	Create complex pseudocode using conditionals and Boolean statements.

STRAND / DOMAIN	**AL.DLCS.7.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**7.1.**	**Computational Thinker**
STANDARD		**Programming and Development**
RELATED CONTENT / EXPECTATION	7.1.7.	Create a program that updates the value of a variable in the program.

STRAND / DOMAIN	**AL.DLCS.7.**	**Digital Literacy and Computer Science**

OBJECTIVE / CATEGORY	**7.4.**	**Computing Analyst**
STANDARD		**Modeling and Simulations**
RELATED CONTENT / EXPECTATION	7.4.26.	Categorize models based on the most appropriate representation of various systems.
RELATED CONTENT / EXPECTATION	7.4.27.	Identify data needed to create a model or simulation of a given event.

Alabama Courses of Study

Technology Education

Grade **8** - Adopted: **2018**

STRAND / DOMAIN	**AL.DLCS.8.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**8.1.**	**Computational Thinker**
STANDARD		**Programming and Development**
RELATED CONTENT / EXPECTATION	8.1.7.	Create a program that includes selection, iteration, or abstraction, and initializes, and updates, at least two variables.

STRAND / DOMAIN	**AL.DLCS.8.**	**Digital Literacy and Computer Science**
OBJECTIVE / CATEGORY	**8.4.**	**Computing Analyst**
STANDARD		**Modeling and Simulations**
RELATED CONTENT / EXPECTATION	8.4.25.	Create a model that represents a system.
RELATED CONTENT / EXPECTATION	8.4.26.	Create a simulation that tests a specific model.

Alaska Content and Performance Standards

Mathematics

Grade **7** - 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.6.	Attend to precision.
GRADE LEVEL EXPECTATION / STRAND	MP.7.	Look for and make use of structure.
GRADE LEVEL EXPECTATION / STRAND	MP.8.	Look for and express regularity in repeated reasoning.
PERFORMANCE / CONTENT STANDARD	**AK.7.EE.**	**Expressions and Equations**
GRADE LEVEL EXPECTATION / STRAND		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
GOAL	**7.EE.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct multi-step equations and inequalities to solve problems by reasoning about the quantities.**
INDICATOR	7.EE.4.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alaska Content and Performance Standards

Mathematics

Grade **8** - 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.6.	Attend to precision.
GRADE LEVEL EXPECTATION / STRAND	MP.7.	Look for and make use of structure.
GRADE LEVEL EXPECTATION / STRAND	MP.8.	Look for and express regularity in repeated reasoning.
PERFORMANCE / CONTENT STANDARD	**AK.8.EE.**	**Expressions and Equations**
GRADE LEVEL EXPECTATION / STRAND		**Understand the connections between proportional relationships, lines, and linear equations.**
GOAL	8.EE.5.	Graph linear equations such as y = mx + b, interpreting m as the slope or rate of change of the graph and b as the y-intercept or starting value. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Alaska Content and Performance Standards

Science

Grade **7** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		**MIDDLE SCHOOL PHYSICAL SCIENCES**
GRADE LEVEL EXPECTATION / STRAND		**Energy**
GOAL	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
PERFORMANCE / CONTENT STANDARD		**MIDDLE SCHOOL LIFE SCIENCES**
GRADE LEVEL EXPECTATION / STRAND		**Matter and Energy in Organisms and Ecosystems**
GOAL	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
PERFORMANCE / CONTENT STANDARD		**MIDDLE SCHOOL LIFE SCIENCES**
GRADE LEVEL EXPECTATION / STRAND		**Interdependent Relationships in Ecosystems**
GOAL	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		**History of Earth**
GOAL	MS-ESS2-2.	Construct and present an evidence-based explanation of how geoscience processes have changed Earth's surface at varying time and spatial scales.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		**Weather and Climate**
GOAL	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		**Human Impacts**
GOAL	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
GOAL	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

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.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL PHYSICAL SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Energy
GOAL	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL LIFE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Matter and Energy in Organisms and Ecosystems
GOAL	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL LIFE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Interdependent Relationships in Ecosystems
GOAL	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		History of Earth
GOAL	MS-ESS2-2.	Construct and present an evidence-based explanation of how geoscience processes have changed Earth's surface at varying time and spatial scales.

PERFORMANCE / CONTENT STANDARD		MIDDLE SCHOOL EARTH AND SPACE SCIENCES
GRADE LEVEL EXPECTATION / STRAND		Weather and Climate
GOAL	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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

GOAL	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
GOAL	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
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 **7** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Data Analysis**
GOAL		**Inference and Models**
INDICATOR	7.DA.IM.01.	Discuss the correctness of a model representing a system by comparing the model's generated results with observed data from the modeled system.
PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Variables**
INDICATOR	7.AP.V.01.	Develop programs that utilize combinations of repetition, compound conditionals, functions, and the manipulation of variables representing different data types.
PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**

GRADE LEVEL EXPECTATION / STRAND		**Algorithms and Programming**
GOAL		**Program Development**
INDICATOR	7.AP.PD.04.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.

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.

Alaska Content and Performance Standards

Technology Education

Grade **8** - Adopted: **2019**

PERFORMANCE / CONTENT STANDARD		**Alaska Computer Science Standards**
GRADE LEVEL EXPECTATION / STRAND		**Data Analysis**
GOAL		**Inference and Models**

INDICATOR	8.DA.IM.01.	Refine computational models based on the data generated by the models.

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

INDICATOR	8.AP.V.01.	Develop programs that utilize combinations of nested repetition, compound conditionals, functions, and the manipulation of variables representing different data types.

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

INDICATOR	8.AP.M.01.	Decompose (break down) problems and sub□problems into abstraction layers to facilitate the design, implementation, and review of complex programs.

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

INDICATOR	8.AP.PD.04.	Explain how effective communication between participants is required for successful collaboration when developing computational artifacts.

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 **7** - 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.6	Attend to precision.
CONCEPT / STANDARD	MP.7	Look for and make use of structure.
CONCEPT / STANDARD	MP.8	Look for and express regularity in repeated reasoning.

STRAND		Expressions and Equations (EE)
CONCEPT / STANDARD	**7.EE.B**	**Solve mathematical problems and problems in real-world context using numerical and algebraic expressions and equations.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	**7.EE.B.4**	**Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems.**

OBJECTIVE / GRADE LEVEL EXPECTATION	7.EE.B.4.a.	Solve word problems leading to equations of the form px+q = r and p(x+q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

Arizona's College and Career Ready Standards

Mathematics

Grade **8** - 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.6	Attend to precision.
CONCEPT / STANDARD	MP.7	Look for and make use of structure.
CONCEPT / STANDARD	MP.8	Look for and express regularity in repeated reasoning.
STRAND		**Expressions and Equations (EE)**
CONCEPT / STANDARD	**8.EE.B**	**Understand the connections between proportional relationships, lines, and linear equations.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	8.EE.B.5	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Arizona's College and Career Ready Standards

Science

Grade **7** - 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 **8** - 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		**Eighth Grade: Focus on Cause and Effect; Energy and Matter; Stability and Change**
CONCEPT / STANDARD		**Earth and Space Sciences: Students explore natural and human-induced cause-and-effect changes in Earth systems over time.**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Earth and Space Standards**
OBJECTIVE / GRADE LEVEL EXPECTATION	8.E1U3.7.	Obtain, evaluate, and communicate information about data and historical patterns to predict natural hazards and other geological events.
OBJECTIVE / GRADE LEVEL EXPECTATION	8.E1U3.8.	Construct and support an argument about how human consumption of limited resources impacts the biosphere.

Arizona's College and Career Ready Standards

Technology Education

Grade **7** - 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 **7** - 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		Practices
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	Practice 6.	Testing and Refining Computational Artifacts: Testing and refinement is the deliberate and iterative process of improving a computational artifact. This process includes debugging (identifying and fixing errors) and comparing actual outcomes to intended outcomes. Students also respond to the changing needs and expectations of end users and improve the performance, reliability, usability, and accessibility of artifacts.
OBJECTIVE / GRADE LEVEL EXPECTATION	6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.

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

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Data and Analysis (DA)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Inference and Models (IM)**
OBJECTIVE / GRADE LEVEL EXPECTATION	7.DA.IM.1.	Use computational models and determine the reliability and validity of data they generate. 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	7.AP.V.1.	Compare and contrast 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	7.AP.C.1.	Design and develop programs that combine control structures, including nested loops and compound conditionals. Practice(s): Creating Computational Artifacts: 5.1

Arizona's College and Career Ready Standards

Technology Education

Grade **8** - 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 **8** - 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		**Practices**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	**Practice 6.**	**Testing and Refining Computational Artifacts: Testing and refinement is the deliberate and iterative process of improving a computational artifact. This process includes debugging (identifying and fixing errors) and comparing actual outcomes to intended outcomes. Students also respond to the changing needs and expectations of end users and improve the performance, reliability, usability, and accessibility of artifacts.**

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

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

STRAND		**Computer Science**
CONCEPT / STANDARD		**Concept: Data and Analysis (DA)**
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL		**Subconcept: Inference and Models (IM)**

OBJECTIVE / GRADE LEVEL EXPECTATION	8.DA.IM.1.	Design computational models and evaluate them based on the reliability and validity of the data they generate. 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	8.AP.V.1.	Create named 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	8.AP.C.1.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. Practice(s): Creating Computational Artifacts: 5.1, 5.2

Arkansas Standards

Mathematics

Grade **7** - Adopted: **2023**

STRAND / TOPIC		**Grade 7 Mathematics Standards**
CONTENT STANDARD	**7.ALG.**	**Algebra**
PERFORMANCE EXPECTATION		**Equations & Inequalities - Students apply previous knowledge of equations and inequalities to two-step problems.**
BENCHMARK / PROFICIENCY	7.ALG.2.	Model and solve fluently two-step equations in real-world or mathematical problems.

Arkansas Standards

Mathematics

Grade **8** - Adopted: **2023**

STRAND / TOPIC		**Grade 8 Mathematics Standards**
CONTENT STANDARD	**8.FN.**	**Functions**
PERFORMANCE EXPECTATION		**Proportional & Linear Relationships - Students understand slope using previous learning of proportional relationships.**
BENCHMARK / PROFICIENCY	8.FN.1.	Graph proportional relationships, interpreting the unit rate as the slope of the graph.

Arkansas Standards

Science

Grade **7** - Adopted: **2017**

STRAND / TOPIC	**AR.SC.3.**	**Interdependent Relationships in Ecosystems**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	7-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STRAND / TOPIC	**AR.SC.4.**	**Matter and Energy in Organisms and Ecosystems**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	7-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
STRAND / TOPIC	**AR.SC.6.**	**History of Earth**
CONTENT STANDARD		**Students who demonstrate understanding can:**

PERFORMANCE EXPECTATION	7-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

STRAND / TOPIC	**AR.SC.7.**	**Human Impacts**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	7-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

STRAND / TOPIC	**AR.SC.8.**	**Engineering, Technology, and Applications of Science**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	7-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	7-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	7-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 **7** - 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

Science

Grade **8** - Adopted: **2017**

STRAND / TOPIC	**AR.SC.1.**	**Waves and Electromagnetic Radiation**
CONTENT STANDARD		**Students who demonstrate understanding can:**

PERFORMANCE EXPECTATION	8-PS4-3.	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

STRAND / TOPIC	**AR.SC.8.**	**Engineering, Technology, and Applications of Science**
CONTENT STANDARD		**Students who demonstrate understanding can:**
PERFORMANCE EXPECTATION	8-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	8-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	8-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 **8** - 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 **7** - Adopted: **2020/Beginning 2021**

STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Computational Thinking and Problem Solving**
PERFORMANCE EXPECTATION		**Content Cluster 2: Students will analyze and utilize concepts of cybersecurity.**

BENCHMARK / PROFICIENCY	CSCB.2.2.	Research and describe real-world cybersecurity problems (e.g., identity theft) as they relate to personal cybersecurity, and how to apply digital and physical methods for protecting and securing personal information

STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Data, Information, and Security**

PERFORMANCE EXPECTATION		**Content Cluster 4: Students will create programs to solve problems.**
BENCHMARK / PROFICIENCY	**CSCB.4.1.**	**Implement the following programming concepts:**
DESCRIPTOR		variable creation
DESCRIPTOR		variable assignment
DESCRIPTOR		conditional branching (e.g., if, if-else, multi-branch)
DESCRIPTOR		iteration (e.g., for, while)
STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 4: Students will create programs to solve problems.**
BENCHMARK / PROFICIENCY	CSCB.4.2.	Create a program using a text-based programming language
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Computers and Communications**
PERFORMANCE EXPECTATION		**Content Cluster 2: Students will analyze and utilize connections between elements of mathematics and computer science.**
BENCHMARK / PROFICIENCY	CSK8.G7.2.2.	Utilize variables to construct expressions and equations
BENCHMARK / PROFICIENCY	CSK8.G7.2.3.	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		**Computers and Communications**
PERFORMANCE EXPECTATION		**Content Cluster 3: Students will analyze and utilize data through the use of computing devices.**
BENCHMARK / PROFICIENCY	CSK8.G7.3.3.	Evaluate the effectiveness of models and simulations for problem solving and analyze data
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Professionalism and Impacts of Computing**

PERFORMANCE EXPECTATION		**Content Cluster 7: Students will analyze the utilization of computers within industry.**
BENCHMARK / PROFICIENCY	CSK8.G7.7.1.	Describe ways in which computers use models of intelligent behavior (e.g., computer vision, language understanding, robot motion, speech)
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 11: Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information.**
BENCHMARK / PROFICIENCY	CSK8.G7.11.3.	Evaluate and discuss the accuracy, age appropriateness, bias, comprehensiveness, credibility, and relevance of electronic information sources concerning real-world problems
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Algorithms and Programs**
PERFORMANCE EXPECTATION		**Content Cluster 11: Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information.**
BENCHMARK / PROFICIENCY	CSK8.G7.11.4.	Utilize data analysis to distinguish between causation and correlation

Arkansas Standards

Technology Education

Grade **8** - Adopted: **2020/Beginning 2021**

STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Computational Thinking and Problem Solving**
PERFORMANCE EXPECTATION		**Content Cluster 2: Students will analyze and utilize concepts of cybersecurity.**
BENCHMARK / PROFICIENCY	CSCB.2.2.	Research and describe real-world cybersecurity problems (e.g., identity theft) as they relate to personal cybersecurity, and how to apply digital and physical methods for protecting and securing personal information
STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 4: Students will create programs to solve problems.**
BENCHMARK / PROFICIENCY	**CSCB.4.1.**	**Implement the following programming concepts:**
DESCRIPTOR		variable creation
DESCRIPTOR		variable assignment

DESCRIPTOR		conditional branching (e.g., if, if-else, multi-branch)
DESCRIPTOR		iteration (e.g., for, while)
STRAND / TOPIC		**Computer Science: Coding Block for Grades 7 or 8 Standards**
CONTENT STANDARD		**Data, Information, and Security**
PERFORMANCE EXPECTATION		**Content Cluster 4: Students will create programs to solve problems.**
BENCHMARK / PROFICIENCY	CSCB.4.2.	Create a program using a text-based programming language
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Computers and Communications**
PERFORMANCE EXPECTATION		**Content Cluster 2: Students will analyze and utilize connections between elements of mathematics and computer science.**
BENCHMARK / PROFICIENCY	CSK8.G8.2.2.	Utilize variables in the creation of functions, methods, or similar constructs
BENCHMARK / PROFICIENCY	CSK8.G8.2.3.	Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, text-based programming, treasure maps)
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Computers and Communications**
PERFORMANCE EXPECTATION		**Content Cluster 3: Students will analyze and utilize data through the use of computing devices.**
BENCHMARK / PROFICIENCY	CSK8.G8.3.3.	Analyze the degree to which a computer model accurately represents an actual situation
STRAND / TOPIC		**Computer Science: 5-8 Standards Document**
CONTENT STANDARD		**Professionalism and Impacts of Computing**
PERFORMANCE EXPECTATION		**Content Cluster 6: Students will create programs to solve problems.**
BENCHMARK / PROFICIENCY	CSK8.G8.6.1.	Create a level-appropriate program individually and collaboratively using a text-based programming language

Mathematics

Grade **7** - 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.6.	Attend to precision.
PERFORMANCE STANDARD / MODE	MP.7.	Look for and make use of structure.
PERFORMANCE STANDARD / MODE	MP.8.	Look for and express regularity in repeated reasoning.

CONTENT STANDARD / DOMAIN / PART	CA.CC.7.EE.	Expressions and Equations
PERFORMANCE STANDARD / MODE		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
EXPECTATION / SUBSTRAND	**7.EE.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
FOUNDATION / PROFICIENCY LEVEL	7.EE.4.a.	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

California Content Standards

Mathematics

Grade **8** - 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.6.	Attend to precision.
PERFORMANCE STANDARD / MODE	MP.7.	Look for and make use of structure.
PERFORMANCE STANDARD / MODE	MP.8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / DOMAIN / PART	**CA.CC.8.EE.**	**Expressions and Equations**
PERFORMANCE STANDARD / MODE		**Understand the connections between proportional relationships, lines, and linear equations.**
EXPECTATION / SUBSTRAND	8.EE.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

California Content Standards

Science

Grade **7** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	**CA.MS-LS.**	**LIFE SCIENCE**
PERFORMANCE STANDARD / MODE	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
EXPECTATION / SUBSTRAND		**Students who demonstrate understanding can:**
FOUNDATION / PROFICIENCY LEVEL	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

FOUNDATION / PROFICIENCY LEVEL	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD / DOMAIN / PART	**CA.MS-ESS.**	**EARTH AND SPACE SCIENCE**
PERFORMANCE STANDARD / MODE	**MS-ESS2.**	**Earth's Systems**
EXPECTATION / SUBSTRAND		**Students who demonstrate understanding can:**
FOUNDATION / PROFICIENCY LEVEL	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

CONTENT STANDARD / DOMAIN / PART	**CA.MS-ESS.**	**EARTH AND SPACE SCIENCE**
PERFORMANCE STANDARD / MODE	**MS-ESS3.**	**Earth and Human Activity**
EXPECTATION / SUBSTRAND		**Students who demonstrate understanding can:**
FOUNDATION / PROFICIENCY LEVEL	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

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

Science

Grade **8** - Adopted: **2013**

CONTENT STANDARD / DOMAIN / PART	**CA.MS-PS.**	**PHYSICAL SCIENCE**
PERFORMANCE STANDARD / MODE	**MS-PS4.**	**Waves and Their Applications in Technologies for Information Transfer**
EXPECTATION / SUBSTRAND		**Students who demonstrate understanding can:**
FOUNDATION / PROFICIENCY LEVEL	MS-PS4-3.	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

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 **7** - 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)

California Content Standards

Technology Education

Grade **8** - 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)

Colorado Academic Standards (CAS)

Mathematics

Grade **7** - 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	MP6.	Attend to precision.
STANDARD	MP7.	Look for and make use of structure.

STANDARD	MP8.	Look for and express regularity in repeated reasoning.

CONTENT AREA		**Seventh Grade, Standard 2. Algebra and Functions**
STANDARD	**7.EE.B.**	**Expressions & Equations: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES	**7.EE.B.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (CCSS: 7.EE.B.4)**
INDICATOR	7.EE.B.4.a.	Solve word problems leading to equations of the form px ± q = r and p(x ± q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (CCSS: 7.EE.B.4.a)

Colorado Academic Standards (CAS)

Mathematics

Grade **8** - 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	MP6.	Attend to precision.
STANDARD	MP7.	Look for and make use of structure.
STANDARD	MP8.	Look for and express regularity in repeated reasoning.

CONTENT AREA		**Eighth Grade, Standard 2. Algebra and Functions**
STANDARD	**8.EE.B.**	**Expressions & Equations: Understand the connections between proportional relationships, lines, and linear equations.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES	8.EE.B.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. (CCSS: 8.EE.B.5)

Colorado Academic Standards (CAS)

Science

Grade **7** - 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.c.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (MS-PS3-3)

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.a.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (MS PS3-3)

CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.7.**	**Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.2.7.a.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-4)
INDICATOR	SC.MS.2.7.b.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)

CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.12.**	**Biodiversity is the wide range of existing life forms that have adapted to the variety of conditions on Earth, from terrestrial to marine ecosystems.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.2.12.a.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.4.**	**Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**

INDICATOR	SC.MS.3.4.b.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (MS-ESS2-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.6.**	**Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**

INDICATOR	SC.MS.3.6.a.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (MS-ESS2-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.9.**	**Mapping the history of natural hazards in a region and understanding related geological forces.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**

INDICATOR	SC.MS.3.9.a.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.10.**	**Human activities have altered the biosphere, sometimes damaging it, although changes to environments can have different impacts for different living things.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**

INDICATOR	SC.MS.3.10.a.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.11.**	**Human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**

INDICATOR	SC.MS.3.11.a.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. (MS-ESS3-5)

Colorado Academic Standards (CAS)

Science

Grade **8** - 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.c.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (MS-PS3-3)
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.a.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (MS PS3-3)
CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.7.**	**Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.2.7.a.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-4)
INDICATOR	SC.MS.2.7.b.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)
CONTENT AREA	**SC.MS.2.**	**Life Science**
STANDARD	**SC.MS.2.12.**	**Biodiversity is the wide range of existing life forms that have adapted to the variety of conditions on Earth, from terrestrial to marine ecosystems.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.2.12.a.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-LS2-5)
CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.4.**	**Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes.**

CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.4.b.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (MS-ESS2-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.6.**	**Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.6.a.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (MS-ESS2-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.9.**	**Mapping the history of natural hazards in a region and understanding related geological forces.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.9.a.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.10.**	**Human activities have altered the biosphere, sometimes damaging it, although changes to environments can have different impacts for different living things.**
CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		**Evidence Outcomes**
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.10.a.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3)

CONTENT AREA	**SC.MS.3.**	**Earth and Space Science**
STANDARD	**SC.MS.3.11.**	**Human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.**

CONCEPTS AND SKILLS / EVIDENCE OUTCOMES		Evidence Outcomes
EVIDENCE OUTCOMES		**Students Can:**
INDICATOR	SC.MS.3.11.a.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. (MS-ESS3-5)

Connecticut State Standards

Mathematics

Grade **7** - Adopted: **2010**

DOMAIN / CONTENT STANDARD	CT.CC.MP.7.	Mathematical Practices
STATE FRAMEWORK	MP.7.1.	Make sense of problems and persevere in solving them.
STATE FRAMEWORK	MP.7.2.	Reason abstractly and quantitatively.
STATE FRAMEWORK	MP.7.3.	Construct viable arguments and critique the reasoning of others.
STATE FRAMEWORK	MP.7.4.	Model with mathematics.
STATE FRAMEWORK	MP.7.6.	Attend to precision.
STATE FRAMEWORK	MP.7.7.	Look for and make use of structure.
STATE FRAMEWORK	MP.7.8.	Look for and express regularity in repeated reasoning.

DOMAIN / CONTENT STANDARD	CT.CC.EE.7.	Expressions and Equations
STATE FRAMEWORK		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
GRADE LEVEL EXPECTATION	**EE.7.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
INDICATOR	EE.7.4(a)	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Connecticut State Standards

Mathematics

Grade **8** - Adopted: **2010**

DOMAIN / CONTENT STANDARD	CT.CC.MP.8.	Mathematical Practices
STATE FRAMEWORK	MP.8.1.	Make sense of problems and persevere in solving them.
STATE FRAMEWORK	MP.8.2.	Reason abstractly and quantitatively.
STATE FRAMEWORK	MP.8.3.	Construct viable arguments and critique the reasoning of others.
STATE FRAMEWORK	MP.8.4.	Model with mathematics.
STATE FRAMEWORK	MP.8.6.	Attend to precision.
STATE FRAMEWORK	MP.8.7.	Look for and make use of structure.
STATE FRAMEWORK	MP.8.8.	Look for and express regularity in repeated reasoning.

DOMAIN / CONTENT STANDARD	CT.CC.EE.8.	Expressions and Equations
STATE FRAMEWORK		**Understand the connections between proportional relationships, lines, and linear equations.**
GRADE LEVEL EXPECTATION	EE.8.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Connecticut State Standards

Science

Grade **7** - 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-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

DOMAIN / CONTENT STANDARD	NGSS.MS-LS.	LIFE SCIENCE
STATE FRAMEWORK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**

GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
INDICATOR	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
INDICATOR	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
DOMAIN / CONTENT STANDARD	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STATE FRAMEWORK	**MS-ESS2.**	**Earth's Systems**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
INDICATOR	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
INDICATOR	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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.

Science

Grade **8** - 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-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

DOMAIN / CONTENT STANDARD	**NGSS.MS-LS.**	**LIFE SCIENCE**
STATE FRAMEWORK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
INDICATOR	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
INDICATOR	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

DOMAIN / CONTENT STANDARD	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STATE FRAMEWORK	**MS-ESS2.**	**Earth's Systems**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
INDICATOR	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
INDICATOR	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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 **7** - 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 **7** - 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.

Connecticut State Standards

Technology Education

Grade **8** - 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 **8** - 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 **7** - Adopted: **2010**

STANDARD / STRAND	DE.CC.7.MP.	Mathematical Practices
STRAND / INDICATOR	CC.7.MP.1.	Make sense of problems and persevere in solving them.
STRAND / INDICATOR	CC.7.MP.2.	Reason abstractly and quantitatively.
STRAND / INDICATOR	CC.7.MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND / INDICATOR	CC.7.MP.4.	Model with mathematics.
STRAND / INDICATOR	CC.7.MP.6.	Attend to precision.
STRAND / INDICATOR	CC.7.MP.7.	Look for and make use of structure.
STRAND / INDICATOR	CC.7.MP.8.	Look for and express regularity in repeated reasoning.

STANDARD / STRAND	DE.CC.7.EE.	Expressions and Equations
STRAND / INDICATOR		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
ENDURING UNDERSTANDING	**CC.7.EE.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
BENCHMARK	CC.7.EE.4a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Delaware Standards and Instruction

Mathematics

Grade **8** - Adopted: **2010**

STANDARD / STRAND	DE.CC.8.MP.	Mathematical Practices
STRAND / INDICATOR	CC.8.MP.1.	Make sense of problems and persevere in solving them.
STRAND / INDICATOR	CC.8.MP.2.	Reason abstractly and quantitatively.
STRAND / INDICATOR	CC.8.MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND / INDICATOR	CC.8.MP.4.	Model with mathematics.
STRAND / INDICATOR	CC.8.MP.6.	Attend to precision.
STRAND / INDICATOR	CC.8.MP.7.	Look for and make use of structure.
STRAND / INDICATOR	CC.8.MP.8.	Look for and express regularity in repeated reasoning.

STANDARD / STRAND	DE.CC.8.EE.	Expressions and Equations
STRAND / INDICATOR		**Understand the connections between proportional relationships, lines, and linear equations.**
ENDURING UNDERSTANDING	CC.8.EE.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Delaware Standards and Instruction

Science

Grade **7** - Adopted: **2013**

STANDARD / STRAND	DE.MS-PS.	PHYSICAL SCIENCE
STRAND / INDICATOR	**MS-PS3.**	**Energy**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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

BENCHMARK	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
BENCHMARK	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STANDARD / STRAND	**DE.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STRAND / INDICATOR	**MS-ESS2.**	**Earth's Systems**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
BENCHMARK	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
BENCHMARK	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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.

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

Science

Grade **8** - Adopted: **2013**

STANDARD / STRAND	DE.MS-PS.	PHYSICAL SCIENCE
STRAND / INDICATOR	**MS-PS3.**	**Energy**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

STANDARD / STRAND	DE.MS-LS.	LIFE SCIENCE
STRAND / INDICATOR	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
BENCHMARK	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

STANDARD / STRAND	DE.MS-ESS.	EARTH AND SPACE SCIENCE
STRAND / INDICATOR	**MS-ESS2.**	**Earth's Systems**
ENDURING UNDERSTANDING		**Students who demonstrate understanding can:**
BENCHMARK	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
BENCHMARK	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
BENCHMARK	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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 **8** - 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 **7** - Adopted: **2018**

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)

Delaware Standards and Instruction

Technology Education

Grade **8** - Adopted: **2018**

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 **7** - 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.2.1d	Express connections between concepts and representations.
INDICATOR	MA.K12.MTR.2.1e	Choose a representation based on the given context or purpose.

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

INDICATOR	MA.K12.MTR.3.1b	Maintain flexibility and accuracy while performing procedures and mental calculations.
INDICATOR	MA.K12.MTR.3.1c	Complete tasks accurately and with confidence.
INDICATOR	MA.K12.MTR.3.1d	Adapt procedures to apply them to a new context.
INDICATOR	MA.K12.MTR.3.1e	Use feedback to improve efficiency when performing calculations.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 4: Engage in discussions that reflect on the mathematical thinking of self and others.**
BENCHMARK	**MA.K12.MTR.4.1**	**Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:**
INDICATOR	MA.K12.MTR.4.1a	Communicate mathematical ideas, vocabulary and methods effectively.
INDICATOR	MA.K12.MTR.4.1b	Analyze the mathematical thinking of others.
INDICATOR	MA.K12.MTR.4.1c	Compare the efficiency of a method to those expressed by others.
INDICATOR	MA.K12.MTR.4.1d	Recognize errors and suggest how to correctly solve the task.
INDICATOR	MA.K12.MTR.4.1e	Justify results by explaining methods and processes.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 5: Use patterns and structure to help understand and connect mathematical concepts.**
BENCHMARK	**MA.K12.MTR.5.1**	**Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:**
INDICATOR	MA.K12.MTR.5.1a	Focus on relevant details within a problem.
INDICATOR	MA.K12.MTR.5.1b	Create plans and procedures to logically order events, steps or ideas to solve problems.
INDICATOR	MA.K12.MTR.5.1c	Decompose a complex problem into manageable parts.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 6: Assess the reasonableness of solutions.**

BENCHMARK	**MA.K12.MTR.6.1**	**Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions:**
INDICATOR	MA.K12.MTR.6.1c	Check calculations when solving problems.
INDICATOR	MA.K12.MTR.6.1d	Verify possible solutions by explaining the methods used.
INDICATOR	MA.K12.MTR.6.1e	Evaluate results based on the given context.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 7: Apply mathematics to real-world contexts.**
BENCHMARK	**MA.K12.MTR.7.1**	**Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:**
INDICATOR	MA.K12.MTR.7.1a	Connect mathematical concepts to everyday experiences.
INDICATOR	MA.K12.MTR.7.1b	Use models and methods to understand, represent and solve problems.
INDICATOR	MA.K12.MTR.7.1c	Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.
BODY OF KNOWLEDGE		**Algebraic Reasoning**
BIG IDEA		**Standard 4: Analyze and represent two-variable proportional relationships.**
BENCHMARK	MA.7.AR.4.3.	Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.

Florida Standards

Mathematics

Grade **8** - 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.2.1d	Express connections between concepts and representations.
INDICATOR	MA.K12.MTR.2.1e	Choose a representation based on the given context or purpose.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 3: Complete tasks with mathematical fluency.**
BENCHMARK	**MA.K12.MTR.3.1**	**Complete tasks with mathematical fluency.Mathematicians who complete tasks with mathematical fluency:**
INDICATOR	MA.K12.MTR.3.1a	Select efficient and appropriate methods for solving problems within the given context.
INDICATOR	MA.K12.MTR.3.1b	Maintain flexibility and accuracy while performing procedures and mental calculations.
INDICATOR	MA.K12.MTR.3.1c	Complete tasks accurately and with confidence.
INDICATOR	MA.K12.MTR.3.1d	Adapt procedures to apply them to a new context.
INDICATOR	MA.K12.MTR.3.1e	Use feedback to improve efficiency when performing calculations.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 4: Engage in discussions that reflect on the mathematical thinking of self and others.**
BENCHMARK	**MA.K12.MTR.4.1**	**Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:**

INDICATOR	MA.K12.MTR.4.1a	Communicate mathematical ideas, vocabulary and methods effectively.
INDICATOR	MA.K12.MTR.4.1b	Analyze the mathematical thinking of others.
INDICATOR	MA.K12.MTR.4.1c	Compare the efficiency of a method to those expressed by others.
INDICATOR	MA.K12.MTR.4.1d	Recognize errors and suggest how to correctly solve the task.
INDICATOR	MA.K12.MTR.4.1e	Justify results by explaining methods and processes.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 5: Use patterns and structure to help understand and connect mathematical concepts.**
BENCHMARK	**MA.K12.MTR.5.1**	**Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:**
INDICATOR	MA.K12.MTR.5.1a	Focus on relevant details within a problem.
INDICATOR	MA.K12.MTR.5.1b	Create plans and procedures to logically order events, steps or ideas to solve problems.
INDICATOR	MA.K12.MTR.5.1c	Decompose a complex problem into manageable parts.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 6: Assess the reasonableness of solutions.**
BENCHMARK	**MA.K12.MTR.6.1**	**Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions:**
INDICATOR	MA.K12.MTR.6.1c	Check calculations when solving problems.
INDICATOR	MA.K12.MTR.6.1d	Verify possible solutions by explaining the methods used.
INDICATOR	MA.K12.MTR.6.1e	Evaluate results based on the given context.
BODY OF KNOWLEDGE		**Mathematical Thinking and Reasoning**
BIG IDEA		**Standard 7: Apply mathematics to real-world contexts.**
BENCHMARK	**MA.K12.MTR.7.1**	**Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:**

INDICATOR	MA.K12.MTR.7.1a	Connect mathematical concepts to everyday experiences.
INDICATOR	MA.K12.MTR.7.1b	Use models and methods to understand, represent and solve problems.
INDICATOR	MA.K12.MTR.7.1c	Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.
BODY OF KNOWLEDGE		**Algebraic Reasoning**
BIG IDEA		**Standard 3: Extend understanding of proportional relationships to two-variable linear equations.**
BENCHMARK	MA.8.AR.3.4.	Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.

Florida Standards

Science

Grade **7** - Adopted: **2008**

BODY OF KNOWLEDGE	**FL.SC.7.P.**	**Physical Science**
BIG IDEA	**SC.7.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.7.P.11.4.	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.

Florida Standards

Science

Grade **8** - Adopted: **2008**

BODY OF KNOWLEDGE	**FL.SC.8.N.**	**Nature of Science**
BIG IDEA	**SC.8.N.1.**	**The Practice of Science - A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation. B: The processes of science frequently do not correspond to the traditional portrayal of ''the scientific method.'' C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge. D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**
BENCHMARK	SC.8.N.1.6.	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.
BODY OF KNOWLEDGE	**FL.SC.8.P.**	**Physical Science**
BIG IDEA	**SC.8.P.8.**	**Properties of Matter - A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass which gives it inertia. B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or ''stuff'') in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth. The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of ''weight'' is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.**

BENCHMARK	SC.8.P.8.4.	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.

Florida Standards

Technology Education

Grade **7** - 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.1.2	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.

Florida Standards

Technology Education

Grade **8** - 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.1.2	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

Mathematics

Grade **8** - Adopted: **2021**

STRAND/TOPIC		**8th Grade**
STANDARD / DESCRIPTION		**FUNCTIONAL & GRAPHICAL REASONING – relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines**
ELEMENT	**8.FGR.5:**	**Describe the properties of functions to define, evaluate, and compare relationships, and use functions and graphs of functions to model and explain real phenomena.**
ELEMENT/GLE	8.FGR.5.5.	Write and explain the equations y = mx + b (slope-intercept form), Ax + By = C (standard form), and (y – y_1) = m(x-x_1) (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.
ELEMENT/GLE	8.FGR.5.9.	Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.
STRAND/TOPIC		**8th Grade**
STANDARD / DESCRIPTION		**FUNCTIONAL & GRAPHICAL REASONING – relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines**
ELEMENT	**8.FGR.7:**	**Justify and use various strategies to solve systems of linear equations to model and explain realistic phenomena.**
ELEMENT/GLE	8.FGR.7.5.	Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular.

Georgia Standards of Excellence

Science

Grade **8** - Adopted: **2016**

STRAND/TOPIC		**Physical Science**

STANDARD / DESCRIPTION	**S8P2.**	**Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.**
ELEMENT	S8P2.d.	Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).

Georgia Standards of Excellence

Technology Education

Grade **7** - 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 **7** - 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-4.7.	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.

Georgia Standards of Excellence

Technology Education

Grade **8** - 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 **8** - 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-4.7.	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 **7** - Adopted: **2010**

CONTENT STANDARD / COURSE	**HI.CC.MP.7.**	**Mathematical Practices**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.1.	Make sense of problems and persevere in solving them.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.2.	Reason abstractly and quantitatively.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.3.	Construct viable arguments and critique the reasoning of others.

STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.4.	Model with mathematics.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.6.	Attend to precision.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.7.	Look for and make use of structure.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.7.8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / COURSE	**HI.CC.EE.7.**	**Expressions and Equations**
STANDARD / PERFORMANCE INDICATOR / DOMAIN		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK	**EE.7.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
EXPECTATION / TOPIC	EE.7.4(a)	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Hawaii Content and Performance Standards

Mathematics

Grade **8** - Adopted: **2010**

CONTENT STANDARD / COURSE	**HI.CC.MP.8.**	**Mathematical Practices**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.1.	Make sense of problems and persevere in solving them.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.2.	Reason abstractly and quantitatively.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.3.	Construct viable arguments and critique the reasoning of others.

STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.4.	Model with mathematics.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.6.	Attend to precision.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.7.	Look for and make use of structure.
STANDARD / PERFORMANCE INDICATOR / DOMAIN	MP.8.8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / COURSE	**HI.CC.EE.8.**	**Expressions and Equations**
STANDARD / PERFORMANCE INDICATOR / DOMAIN		**Understand the connections between proportional relationships, lines, and linear equations.**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK	EE.8.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Hawaii Content and Performance Standards

Science

Grade **7** - 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-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
CONTENT STANDARD / COURSE	**NGSS.MS-LS.**	**LIFE SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**

INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**
EXPECTATION / TOPIC	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
EXPECTATION / TOPIC	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
CONTENT STANDARD / COURSE	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-ESS2.**	**Earth's Systems**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**
EXPECTATION / TOPIC	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
EXPECTATION / TOPIC	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION / TOPIC	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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.

Hawaii Content and Performance Standards

Science

Grade **8** - 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-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

CONTENT STANDARD / COURSE	**NGSS.MS-LS.**	**LIFE SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**
EXPECTATION / TOPIC	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
EXPECTATION / TOPIC	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD / COURSE	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / PERFORMANCE INDICATOR / DOMAIN	**MS-ESS2.**	**Earth's Systems**
INDICATOR / GRADE LEVEL EXPECTATION / BENCHMARK		**Students who demonstrate understanding can:**

EXPECTATION / TOPIC	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
EXPECTATION / TOPIC	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION / TOPIC	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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.