Main Criteria: Forward Education

Secondary Criteria: Nebraska Content Area Standards, Nevada Academic Content Standards, New Hampshire College and Career Ready Standards, New Jersey Student Learning Standards, New Mexico Content Standards, New York State Learning Standards and Core Curriculum, North Carolina Standard Course of Study, North Dakota Content Standards, Ohio Learning Standards, Oklahoma Academic Standards, Oregon Academic Content Standards, Pennsylvania Core and Academic Standards

Subjects: Mathematics, Science, Technology Education

Grades: 5, 6, Key Stage 2

Forward Education

Smart Farming with Automated Watering

Nebraska Content Area Standards

Mathematics

Grade **6** - Adopted: **2022**

CONTENT STANDARD		**Grade 6 Standards**
STRAND	**6.R.**	**RATIOS AND PROPORTIONS: Students will understand ratio concepts and use ratio reasoning to solve problems.**
INDICATOR	**6.R.2.**	**Represent: Students will represent ratios and rates on the coordinate plane.**
STRAND	6.R.2.d.	Make tables of equivalent ratios relating quantities with whole number measurements.

CONTENT STANDARD		**Grade 6 Standards**
STRAND	**6.A.**	**ALGEBRA: Students will solve problems and reason with algebra using multiple representations, make connections within math and across disciplines, and communicate their ideas.**
INDICATOR	**6.A.1.**	**Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving equations and inequalities.**
STRAND	6.A.1.c.	Use substitution to determine if a given value for a variable makes an equation or inequality true.

Nebraska Content Area Standards

Science

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

CONTENT STANDARD	**NE.SC.5.8.**	**Matter and Energy in Organisms and Ecosystems**
STRAND	**SC.5.8.2.**	**Gather and analyze data to communicate understanding of matter and energy in organisms and ecosystems.**
INDICATOR	SC.5.8.2.B.	Support an argument that plants get the materials they need for growth chiefly from air and water.

CONTENT STANDARD	**NE.SC.5.13.**	**Earth's Systems**
STRAND	**SC.5.13.4.**	**Gather and analyze data to communicate understanding of Earth's systems.**
INDICATOR	SC.5.13.4.C.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
INDICATOR	SC.5.13.4.E.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Nebraska Content Area Standards

Science

Grade **6** - Adopted: **2017**

CONTENT STANDARD	**NE.SC.6.4.**	**Energy**
STRAND	**SC.6.4.1.**	**Gather, analyze, and communicate evidence of energy.**
INDICATOR	SC.6.4.1.B.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principle and potential impacts on people and the natural environment that may limit possible solutions.

Nebraska Content Area Standards

Technology Education

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

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**BASIC TECHNOLOGY - Operations/Concepts**
INDICATOR		**HARDWARE/SOFTWARE STANDARDS**
STRAND		Apply strategies for identifying and solving routine problems that occur during everyday computer use.

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**COMPUTER SCIENCE/PROGRAMMING**
INDICATOR		**COMPUTATIONAL THINKING STANDARDS**
STRAND		Create algorithms, or series of ordered steps, to solve problems.
STRAND		Decompose a problem into smaller more manageable parts.
STRAND		Optimize an algorithm for execution by a computer.

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**COMPUTER SCIENCE/PROGRAMMING**
INDICATOR		**PROGRAMMING STANDARDS**
STRAND		Write programs using visual (block-based) programming languages (scratch, code.org).

Nebraska Content Area Standards

Technology Education

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

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**BASIC TECHNOLOGY - Operations/Concepts**
INDICATOR		**HARDWARE/SOFTWARE STANDARDS**
STRAND		Apply strategies for identifying and solving routine problems that occur during everyday computer use.

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**

STRAND		**DIGITAL MEDIA**
INDICATOR		**DIGITAL MEDIA STANDARDS**
STRAND		Independently use appropriate technology tools (graphic organizers, audio and video) to define problems and propose hypotheses.
CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**COMPUTER SCIENCE/PROGRAMMING**
INDICATOR		**COMPUTATIONAL THINKING STANDARDS**
STRAND		Create algorithms, or series of ordered steps, to solve problems.
STRAND		Decompose a problem into smaller more manageable parts.
STRAND		Optimize an algorithm for execution by a computer.
STRAND		Create simulations/models to understand natural phenomena and test hypotheses.
CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**COMPUTER SCIENCE/PROGRAMMING**
INDICATOR		**PROGRAMMING STANDARDS**
STRAND		Write programs using visual (block-based) programming languages (scratch, code.org).

Nevada Academic Content Standards

Mathematics

Grade **5** - Adopted: **2010**

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

Nevada Academic Content Standards

Mathematics

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

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

CONTENT STANDARD	**NV.CC.RP.6.**	**Ratios and Proportional Relationships**
STRAND / INDICATOR		**Understand ratio concepts and use ratio reasoning to solve problems.**
INDICATOR / GRADE LEVEL EXPECTATION	**RP.6.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
GRADE LEVEL EXPECTATION	RP.6.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD	**NV.CC.EE.6.**	**Expressions and Equations**
STRAND / INDICATOR		**Reason about and solve one-variable equations and inequalities.**
INDICATOR / GRADE LEVEL EXPECTATION	EE.6.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Nevada Academic Content Standards

Science

Grade **5** - Adopted: **2014**

CONTENT STANDARD	**NV.5-LS.**	**LIFE SCIENCE**
STRAND / INDICATOR	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**

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

CONTENT STANDARD	**NV.5-ESS.**	**EARTH AND SPACE SCIENCE**
STRAND / INDICATOR	**5-ESS3.**	**Earth and Human Activity**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CONTENT STANDARD	**NV.3-5-ETS.**	**ENGINEERING DESIGN**
STRAND / INDICATOR	**3-5-ETS1.**	**Engineering Design**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
GRADE LEVEL EXPECTATION	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
GRADE LEVEL EXPECTATION	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Nevada Academic Content Standards

Science

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

CONTENT STANDARD	**NV.MS-LS.**	**LIFE SCIENCE**
STRAND / INDICATOR	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD	**NV.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STRAND / INDICATOR	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**

GRADE LEVEL EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
GRADE LEVEL EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
CONTENT STANDARD	**NV.MS-ETS.**	**ENGINEERING DESIGN**
STRAND / INDICATOR	**MS-ETS1.**	**Engineering Design**
INDICATOR / GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	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.
GRADE LEVEL EXPECTATION	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
GRADE LEVEL EXPECTATION	MS-ETS1-4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

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

CONTENT STANDARD	**NV.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Key Ideas and Details**
INDICATOR / GRADE LEVEL 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.
INDICATOR / GRADE LEVEL EXPECTATION	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
CONTENT STANDARD	**NV.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Craft and Structure**
INDICATOR / GRADE LEVEL 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.
INDICATOR / GRADE LEVEL 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.
CONTENT STANDARD	**NV.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Integration of Knowledge and Ideas**

INDICATOR / GRADE LEVEL EXPECTATION	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
INDICATOR / GRADE LEVEL 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.
CONTENT STANDARD	**NV.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Range of Reading and Level of Text Complexity**
INDICATOR / GRADE LEVEL 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.
CONTENT STANDARD	**NV.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Text Types and Purposes**
INDICATOR / GRADE LEVEL EXPECTATION	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
GRADE LEVEL EXPECTATION	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
CONTENT STANDARD	**NV.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND / INDICATOR		**Production and Distribution of Writing**
INDICATOR / GRADE LEVEL EXPECTATION	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
INDICATOR / GRADE LEVEL 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.

Nevada Academic Content Standards

Technology Education

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

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P1.**	**Fostering an Inclusive Computing Culture**
GRADE LEVEL EXPECTATION	P1.2.	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

GRADE LEVEL EXPECTATION	P1.3.	Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P3.**	**Recognizing and Defining Computational Problems**
GRADE LEVEL EXPECTATION	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
GRADE LEVEL EXPECTATION	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
GRADE LEVEL EXPECTATION	P3.3.	Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P4.**	**Developing and Using Abstractions**
GRADE LEVEL EXPECTATION	P4.3.	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P5.**	**Creating Computational Artifacts**
GRADE LEVEL EXPECTATION	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.
GRADE LEVEL EXPECTATION	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P6.**	**Testing and Refining Computational Artifacts**
GRADE LEVEL EXPECTATION	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE
STRAND / INDICATOR		Practices
INDICATOR / GRADE LEVEL EXPECTATION	P7.	Communicating About Computing
GRADE LEVEL EXPECTATION	P7.1.	Select, organize, and interpret large data sets from multiple sources to support a claim.

Nevada Academic Content Standards

Technology Education

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

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE
STRAND / INDICATOR		Practices
INDICATOR / GRADE LEVEL EXPECTATION	P1.	Fostering an Inclusive Computing Culture
GRADE LEVEL EXPECTATION	P1.2.	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.
GRADE LEVEL EXPECTATION	P1.3.	Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE
STRAND / INDICATOR		Practices
INDICATOR / GRADE LEVEL EXPECTATION	P3.	Recognizing and Defining Computational Problems
GRADE LEVEL EXPECTATION	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
GRADE LEVEL EXPECTATION	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
GRADE LEVEL EXPECTATION	P3.3.	Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE
STRAND / INDICATOR		Practices
INDICATOR / GRADE LEVEL EXPECTATION	P4.	Developing and Using Abstractions

GRADE LEVEL EXPECTATION	P4.3.	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P5.**	**Creating Computational Artifacts**
GRADE LEVEL EXPECTATION	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.
GRADE LEVEL EXPECTATION	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P6.**	**Testing and Refining Computational Artifacts**
GRADE LEVEL EXPECTATION	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Practices**
INDICATOR / GRADE LEVEL EXPECTATION	**P7.**	**Communicating About Computing**
GRADE LEVEL EXPECTATION	P7.1.	Select, organize, and interpret large data sets from multiple sources to support a claim.

CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for INTEGRATED TECHNOLOGY**
STRAND / INDICATOR		**Innovative Designer**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.ID.B.1.	Select and use digital tools to support a design process and expand their understanding to identify constraints, trade-offs, and to weigh risks.
INDICATOR / GRADE LEVEL EXPECTATION	6-8.ID.C.1.	Engage in a design process to inquire and analyze, develop ideas, test and revise prototypes, embracing the cyclical process of trial and error, and understanding problems or setbacks as potential opportunities for improvement.
INDICATOR / GRADE LEVEL EXPECTATION	6-8.ID.D.1.	Demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for INTEGRATED TECHNOLOGY
STRAND / INDICATOR		**Computational Thinker**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.CT.B.1.	Find or organize data and use technology to analyze and represent the data to solve problems and make decisions.
INDICATOR / GRADE LEVEL EXPECTATION	6-8.CT.C.1.	Break problems into component parts, identify key pieces, and use that information to problem solve.

New Hampshire College and Career Ready Standards

Mathematics

Grade **5** - Adopted: **2010**

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

New Hampshire College and Career Ready Standards

Mathematics

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

STRAND / STANDARD	NH.CC.MP.6.	Mathematical Practices
STANDARD / GLE	MP.6.1.	Make sense of problems and persevere in solving them.
STANDARD / GLE	MP.6.2.	Reason abstractly and quantitatively.
STANDARD / GLE	MP.6.3.	Construct viable arguments and critique the reasoning of others.

STANDARD / GLE	MP.6.4.	Model with mathematics.
STANDARD / GLE	MP.6.5.	Use appropriate tools strategically.
STANDARD / GLE	MP.6.7.	Look for and make use of structure.

STRAND / STANDARD	**NH.CC.RP.6.**	**Ratios and Proportional Relationships**
STANDARD / GLE		**Understand ratio concepts and use ratio reasoning to solve problems.**
GRADE LEVEL EXPECTATION	**RP.6.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
EXPECTATION	RP.6.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / STANDARD	**NH.CC.EE.6.**	**Expressions and Equations**
STANDARD / GLE		**Reason about and solve one-variable equations and inequalities.**
GRADE LEVEL EXPECTATION	EE.6.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

New Hampshire College and Career Ready Standards

Science

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

STRAND / STANDARD	**NGSS.5-LS.**	**LIFE SCIENCE**
STANDARD / GLE	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STRAND / STANDARD	**NGSS.5-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / GLE	**5-ESS3.**	**Earth and Human Activity**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STRAND / STANDARD	**NGSS.3-5-ETS.**	**ENGINEERING DESIGN**

STANDARD / GLE	**3-5-ETS1.**	**Engineering Design**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
EXPECTATION	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
EXPECTATION	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

New Hampshire College and Career Ready Standards

Science

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

STRAND / STANDARD	**NGSS.MS-LS.**	**LIFE SCIENCE**
STANDARD / GLE	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

STRAND / STANDARD	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / GLE	**MS-ESS3.**	**Earth and Human Activity**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

STRAND / STANDARD	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**
STANDARD / GLE	**MS-ETS1.**	**Engineering Design**
GRADE LEVEL EXPECTATION		**Students who demonstrate understanding can:**
EXPECTATION	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	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	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.

New Hampshire College and Career Ready Standards

Technology Education

Grade **5** - Adopted: **2005**

STRAND / STANDARD	**NH.ICT.**	**Information and Communication Technologies Program**
STANDARD / GLE	**ICT.2.**	**USE WITH CORE SUBJECTS: Become proficient in the use of 21st century tools to access, manage, integrate, evaluate, and create information within the context of the core subjects of:**
GRADE LEVEL EXPECTATION	ICT.2.d.	Science

STRAND / STANDARD	**NH.ICT.**	**Information and Communication Technologies Program**
STANDARD / GLE	**ICT.3.**	**COGNITIVE PROFICIENCY: Use 21st century tools to develop cognitive proficiency in:**
GRADE LEVEL EXPECTATION	ICT.3.c.	Problem solving

STRAND / STANDARD	**NH.ICT.**	**Information and Communication Technologies Program**
STANDARD / GLE	**ICT.5.**	**DIGITAL PORTFOLIOS: Create digital portfolios which:**
GRADE LEVEL EXPECTATION	ICT.5.b.	Represent proficient, ethical, responsible use of 21st century tools within the context of the core subjects

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

STRAND / STANDARD		**Computer Science**
STANDARD / GLE		**Algorithms & Programming**
GRADE LEVEL EXPECTATION	1B-AP-13.	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.
GRADE LEVEL EXPECTATION	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations.

New Hampshire College and Career Ready Standards

Technology Education

Grade **6** - Adopted: **2005**

STRAND / STANDARD	**NH.ICT.**	**Information and Communication Technologies Program**
STANDARD / GLE	**ICT.2.**	**USE WITH CORE SUBJECTS: Become proficient in the use of 21st century tools to access, manage, integrate, evaluate, and create information within the context of the core subjects of:**
GRADE LEVEL EXPECTATION	ICT.2.d.	Science

STRAND / STANDARD	NH.ICT.	Information and Communication Technologies Program
STANDARD / GLE	**ICT.3.**	**COGNITIVE PROFICIENCY: Use 21st century tools to develop cognitive proficiency in:**
GRADE LEVEL EXPECTATION	ICT.3.c.	Problem solving

STRAND / STANDARD	NH.ICT.	Information and Communication Technologies Program
STANDARD / GLE	**ICT.5.**	**DIGITAL PORTFOLIOS: Create digital portfolios which:**
GRADE LEVEL EXPECTATION	ICT.5.b.	Represent proficient, ethical, responsible use of 21st century tools within the context of the core subjects

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

STRAND / STANDARD		Computer Science
STANDARD / GLE		**Algorithms & Programming**
GRADE LEVEL EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms.

New Jersey Student Learning Standards

Mathematics

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

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

New Jersey Student Learning Standards

Mathematics

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

CONTENT AREA / STANDARD	NJ.MP.	Mathematical Practices
STRAND	MP.1.	Make sense of problems and persevere in solving them.

STRAND	MP.2.	Reason abstractly and quantitatively.
STRAND	MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND	MP.4.	Model with mathematics.
STRAND	MP.5.	Use appropriate tools strategically.
STRAND	MP.7.	Look for and make use of structure.

CONTENT AREA / STANDARD	**NJ.6.RP.**	**Ratios and Proportional Relationships**
STRAND	**6.RP.A.**	**Understand ratio concepts and use ratio reasoning to solve problems.**
CONTENT STATEMENT	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
CUMULATIVE PROGRESS INDICATOR	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT AREA / STANDARD	**NJ.6.EE.**	**Expressions and Equations**
STRAND	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities.**
CONTENT STATEMENT	6.EE.B.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

New Jersey Student Learning Standards

Science

Grade **5** - Adopted: **2020/Effective 2021**

CONTENT AREA / STANDARD	**3-5-ETS.**	**Engineering Design**
STRAND	**3-5-ETS1:**	**Engineering Design**
CONTENT STATEMENT	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
CONTENT STATEMENT	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
CONTENT STATEMENT	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

CONTENT AREA / STANDARD	**5-LS.**	**Life Science**
STRAND	**5-LS1:**	**From Molecules to Organisms: Structures and Processes**

CONTENT STATEMENT	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
CONTENT AREA / STANDARD	**5-ESS.**	**Earth and Space Science**
STRAND	**5-ESS3:**	**Earth and Human Activity**
CONTENT STATEMENT	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues.

New Jersey Student Learning Standards

Science

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

CONTENT AREA / STANDARD	**MS-LS.**	**Life Science**
STRAND	**MS-LS2:**	**Ecosystems: Interactions, Energy, and Dynamics**
CONTENT STATEMENT	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
CONTENT AREA / STANDARD	**MS-ESS.**	**Earth and Space Science**
STRAND	**MS-ESS3:**	**Earth and Human Activity**
CONTENT STATEMENT	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
CONTENT STATEMENT	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
CONTENT AREA / STANDARD	**MS-ETS.**	**Engineering, Technology and Applications of Science**
STRAND	**MS5-ETS1:**	**Engineering Design**
CONTENT STATEMENT	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.
CONTENT STATEMENT	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
CONTENT STATEMENT	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.

New Jersey Student Learning Standards

Technology Education

Grade **5** - Adopted: **2020**

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**1 Fostering an Inclusive Computing and Design Culture**
CONTENT STATEMENT		**Building an inclusive and diverse computing culture requires strategies for incorporating perspectives from people of different genders, ethnicities, and abilities. Incorporating these perspectives involves understanding the personal, ethical, social, economic, and cultural contexts in which people operate. Considering the needs of diverse users during the design process is essential to producing inclusive computational products. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**3 Recognizing and Defining Computational Problems**
CONTENT STATEMENT		**The ability to recognize appropriate and worthwhile opportunities to apply computation is a skill that develops over time and is central to computing. Solving a problem with a computational approach requires defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.
CUMULATIVE PROGRESS INDICATOR		Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**4 Developing and Using Abstractions**
CONTENT STATEMENT		**Abstractions are formed by identifying patterns and extracting common features from specific examples in order to create generalizations. Using generalized solutions and parts of solutions designed for broad reuse simplifies the development process by managing complexity. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Evaluate existing technological functionalities and incorporate them into new designs.
CUMULATIVE PROGRESS INDICATOR		Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**5 Creating Computational Artifacts**
CONTENT STATEMENT		**The process of developing computational artifacts embraces both creative expression and the exploration of ideas to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to their community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps. When engaging in this practice, students:**

CUMULATIVE PROGRESS INDICATOR		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.
CUMULATIVE PROGRESS INDICATOR		Create a computational artifact for practical intent, personal expression, or to address a societal issue.
CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**6 Testing and Refining Computational Artifacts**
CONTENT STATEMENT		**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. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Systematically test computational artifacts by considering all scenarios and using test cases.
CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Engineering Design**
CONTENT STATEMENT		**Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge. Often, several design solutions exist, each better in some way than the others.**
CUMULATIVE PROGRESS INDICATOR	8.2.5.ED.2:	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Engineering Design**
CONTENT STATEMENT		**Engineering design requirements include desired features and limitations that need to be considered.**
CUMULATIVE PROGRESS INDICATOR	8.2.5.ED.4:	Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).
CUMULATIVE PROGRESS INDICATOR	8.2.5.ED.5:	Describe how specifications and limitations impact the engineering design process.
CUMULATIVE PROGRESS INDICATOR	8.2.5.ED.6:	Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.
CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Nature of Technology**

CONTENT STATEMENT		**Technology innovation and improvement may be influenced by a variety of factors. Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world.**
CUMULATIVE PROGRESS INDICATOR	8.2.5.NT.1 :	Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.

New Jersey Student Learning Standards

Technology Education

Grade **6** - Adopted: **2020**

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**1 Fostering an Inclusive Computing and Design Culture**
CONTENT STATEMENT		**Building an inclusive and diverse computing culture requires strategies for incorporating perspectives from people of different genders, ethnicities, and abilities. Incorporating these perspectives involves understanding the personal, ethical, social, economic, and cultural contexts in which people operate. Considering the needs of diverse users during the design process is essential to producing inclusive computational products. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**3 Recognizing and Defining Computational Problems**
CONTENT STATEMENT		**The ability to recognize appropriate and worthwhile opportunities to apply computation is a skill that develops over time and is central to computing. Solving a problem with a computational approach requires defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.
CUMULATIVE PROGRESS INDICATOR		Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**4 Developing and Using Abstractions**
CONTENT STATEMENT		**Abstractions are formed by identifying patterns and extracting common features from specific examples in order to create generalizations. Using generalized solutions and parts of solutions designed for broad reuse simplifies the development process by managing complexity. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Evaluate existing technological functionalities and incorporate them into new designs.
CUMULATIVE PROGRESS INDICATOR		Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**5 Creating Computational Artifacts**
CONTENT STATEMENT		**The process of developing computational artifacts embraces both creative expression and the exploration of ideas to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to their community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		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.
CUMULATIVE PROGRESS INDICATOR		Create a computational artifact for practical intent, personal expression, or to address a societal issue.

CONTENT AREA / STANDARD		**Computer Science and Design Thinking Practices**
STRAND		**6 Testing and Refining Computational Artifacts**
CONTENT STATEMENT		**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. When engaging in this practice, students:**
CUMULATIVE PROGRESS INDICATOR		Systematically test computational artifacts by considering all scenarios and using test cases.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Computing Systems**
CONTENT STATEMENT		**Software and hardware determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple considerations and potential trade-offs.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.CS.3:	Justify design decisions and explain potential system trade-offs.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Data & Analysis**
CONTENT STATEMENT		**Computer models can be used to simulate events, examine theories and inferences, or make predictions.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.DA.5:	Test, analyze, and refine computational models.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Individuals design algorithms that are reusable in many situations. Algorithms that are readable are easier to follow, test, and debug.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.AP.1:	Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Individuals design and test solutions to identify problems taking into consideration the diverse needs of the users and the community.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.AP.8:	Systematically test and refine programs using a range of test cases and users.

CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Engineering Design**
CONTENT STATEMENT		**Engineering design is a systematic, creative, and iterative process used to address local and global problems. The process includes generating ideas, choosing the best solution, and making, testing, and redesigning models or prototypes.**
CUMULATIVE PROGRESS INDICATOR	8.2.8.ED.2:	Identify the steps in the design process that could be used to solve a problem.
CUMULATIVE PROGRESS INDICATOR	8.2.8.ED.4:	Investigate a malfunctioning system, identify its impact, and explain the step-by-step process used to troubleshoot, evaluate, and test options to repair the product in a collaborative team.

CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Engineering Design**
CONTENT STATEMENT		**Engineering design requirements and specifications involve making trade-offs between competing requirements and desired design features.**
CUMULATIVE PROGRESS INDICATOR	8.2.8.ED.5:	Explain the need for optimization in a design process.
CUMULATIVE PROGRESS INDICATOR	8.2.8.ED.6:	Analyze how trade-offs can impact the design of a product.

CUMULATIVE PROGRESS INDICATOR	8.2.8.ED.7:	Design a product to address a real-world problem and document the iterative design process, including decisions made as a result of specific constraints and trade-offs (e.g., annotated sketches).

CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Nature of Technology**
CONTENT STATEMENT		**Technology advances through the processes of innovation and invention which relies upon the imaginative and inventive nature of people. Sometimes a technology developed for one purpose is adapted to serve other purposes. Engineers use a systematic process of creating or modifying technologies that is fueled and constrained by physical laws, cultural norms, and economic resources. Scientists use systematic investigation to understand the natural world.**

CUMULATIVE PROGRESS INDICATOR	8.2.8.NT.1:	Examine a malfunctioning tool, product, or system and propose solutions to the problem.

CONTENT AREA / STANDARD	**8.2.**	**Computer Science and Design Thinking – Design Thinking**
STRAND		**Effects of Technology on the Natural World**
CONTENT STATEMENT		**Resources need to be utilized wisely to have positive effects on the environment and society. Some technological decisions involve tradeoffs between environmental and economic needs, while others have positive effects for both the economy and environment.**

CUMULATIVE PROGRESS INDICATOR	8.2.8.ETW.3:	Analyze the design of a product that negatively impacts the environment or society and develop possible solutions to lessen its impact.

New Mexico Content Standards

Mathematics

Grade **5** - Adopted: **2012**

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

Mathematics

Grade **6** - Adopted: **2012**

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

STRAND / CONTENT STANDARD	NM.6.RP.	Ratios and Proportional Relationships
BENCHMARK / STANDARD		**Understand ratio concepts and use ratio reasoning to solve problems.**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
PERFORMANCE STANDARD / INDICATOR	6.RP.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / CONTENT STANDARD	NM.6.EE.	Expressions and Equations
BENCHMARK / STANDARD		**Reason about and solve one-variable equations and inequalities.**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

New Mexico Content Standards

Science

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

STRAND / CONTENT STANDARD	NGSS.5-LS.	LIFE SCIENCE

BENCHMARK / STANDARD	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STRAND / CONTENT STANDARD	**NGSS.5-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**5-ESS3.**	**Earth and Human Activity**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STRAND / CONTENT STANDARD	**NGSS.3-5-ETS.**	**ENGINEERING DESIGN**
BENCHMARK / STANDARD	**3-5-ETS1.**	**Engineering Design**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
PERFORMANCE STANDARD / INDICATOR	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
PERFORMANCE STANDARD / INDICATOR	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

New Mexico Content Standards

Science

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

STRAND / CONTENT STANDARD	**NGSS.MS-LS.**	**LIFE SCIENCE**
BENCHMARK / STANDARD	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**

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

STRAND / CONTENT STANDARD	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**MS-ESS3.**	**Earth and Human Activity**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
PERFORMANCE STANDARD / INDICATOR	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

STRAND / CONTENT STANDARD	**NM.MS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**MS-ESS3.**	**Human Impacts**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	MS-ESS3-3 NM.	Describe the advantages and disadvantages associated with technologies related to local industries and energy production.

STRAND / CONTENT STANDARD	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**
BENCHMARK / STANDARD	**MS-ETS1.**	**Engineering Design**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / 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.
PERFORMANCE STANDARD / 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.
PERFORMANCE STANDARD / 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.

New Mexico Content Standards

Technology Education

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

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**1B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Program Development**
INDICATOR	1B-AP-13.	Use an iterative process to plan the development of a program by including others'' perspectives and considering user preferences. (P1.1, P5.1)
INDICATOR	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)
INDICATOR	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**1B-IC.**	**Impacts of Computing**
PERFORMANCE STANDARD / INDICATOR		**Social Interactions**
INDICATOR	1B-IC-20.	Seek diverse perspectives for the purpose of improving computational artifacts. (P1.1)

New Mexico Content Standards

Technology Education

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

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.2.**	**Level 2 (Ages 11-14)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**2-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Algorithms**
INDICATOR	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

STRAND / CONTENT STANDARD		CSTA K-12 Computer Science Standards
BENCHMARK / STANDARD	CSTA.2.	Level 2 (Ages 11-14)
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	2-AP.	Algorithms & Programming
PERFORMANCE STANDARD / INDICATOR		Modularity
INDICATOR	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

STRAND / CONTENT STANDARD		CSTA K-12 Computer Science Standards
BENCHMARK / STANDARD	CSTA.2.	Level 2 (Ages 11-14)
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	2-IC.	Impacts of Computing
PERFORMANCE STANDARD / 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)

New York State Learning Standards and Core Curriculum

Mathematics

Grade **5** - Adopted: **2017/Updated 2019**

STRAND / DOMAIN / UNIFYING THEME		Mathematical Practices
CATEGORY / CLUSTER / KEY IDEA	MP.1	Make sense of problems and persevere in solving them.
CATEGORY / CLUSTER / KEY IDEA	MP.2	Reason abstractly and quantitatively.
CATEGORY / CLUSTER / KEY IDEA	MP.3	Construct viable arguments and critique the reasoning of others.
CATEGORY / CLUSTER / KEY IDEA	MP.4	Model with mathematics.

CATEGORY / CLUSTER / KEY IDEA	MP.5	Use appropriate tools strategically.
CATEGORY / CLUSTER / KEY IDEA	MP.7	Look for and make use of structure.

New York State Learning Standards and Core Curriculum

Mathematics

Grade **6** - Adopted: **2017/Updated 2019**

STRAND / DOMAIN / UNIFYING THEME		**Mathematical Practices**
CATEGORY / CLUSTER / KEY IDEA	MP.1	Make sense of problems and persevere in solving them.
CATEGORY / CLUSTER / KEY IDEA	MP.2	Reason abstractly and quantitatively.
CATEGORY / CLUSTER / KEY IDEA	MP.3	Construct viable arguments and critique the reasoning of others.
CATEGORY / CLUSTER / KEY IDEA	MP.4	Model with mathematics.
CATEGORY / CLUSTER / KEY IDEA	MP.5	Use appropriate tools strategically.
CATEGORY / CLUSTER / KEY IDEA	MP.7	Look for and make use of structure.

STRAND / DOMAIN / UNIFYING THEME		**Grade 6**
CATEGORY / CLUSTER / KEY IDEA	**NY-6.RP.**	**Ratios and Proportional Relationships**
STANDARD / CONCEPTUAL UNDERSTANDING		**Understand ratio concepts and use ratio reasoning to solve problems.**
EXPECTATION / CONTENT SPECIFICATION	**NY-6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems.**
GRADE EXPECTATION	NY-6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / DOMAIN / UNIFYING THEME		**Grade 6**
CATEGORY / CLUSTER / KEY IDEA	**NY-6.EE.**	**Expressions, Equations, and Inequalities**
STANDARD / CONCEPTUAL UNDERSTANDING		**Reason about and solve one-variable equations and inequalities.**
EXPECTATION / CONTENT SPECIFICATION	NY-6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

New York State Learning Standards and Core Curriculum

Science

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

STRAND / DOMAIN / UNIFYING THEME	**NY.5.2.**	**Matter and Energy in Organisms and Ecosystems**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STRAND / DOMAIN / UNIFYING THEME	**NY.5.3.**	**Earth's Systems**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect Earth's resources and environment.

STRAND / DOMAIN / UNIFYING THEME	**NY.3-5.ED.**	**Engineering Design**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

STANDARD / CONCEPTUAL UNDERSTANDING	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
STANDARD / CONCEPTUAL UNDERSTANDING	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

New York State Learning Standards and Core Curriculum

Science

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

STRAND / DOMAIN / UNIFYING THEME	**NY.MS.8.**	**Interdependent Relationships in Ecosystems**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and protecting ecosystem stability.
STRAND / DOMAIN / UNIFYING THEME	**NY.MS.15.**	**Human Impacts**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
STANDARD / CONCEPTUAL UNDERSTANDING	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
STRAND / DOMAIN / UNIFYING THEME	**NY.MS.ED.**	**Engineering Design**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	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.

STANDARD / CONCEPTUAL UNDERSTANDING	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD / CONCEPTUAL UNDERSTANDING	MS-ETS1-4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Grade **6** - Adopted: **2011**

STRAND / DOMAIN / UNIFYING THEME	**NY.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Key Ideas and Details**
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STRAND / DOMAIN / UNIFYING THEME	**NY.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Craft and Structure**
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.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 / CONCEPTUAL UNDERSTANDING	6-8.RST.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 / UNIFYING THEME	**NY.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Integration of Knowledge and Ideas**
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.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 / UNIFYING THEME	**NY.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Range of Reading and Level of Text Complexity**
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.RST.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 / UNIFYING THEME	**NY.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Text Types and Purposes**
STANDARD / CONCEPTUAL UNDERSTANDING	**6-8.WHST.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
EXPECTATION / CONTENT SPECIFICATION	6-8.WHST.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STRAND / DOMAIN / UNIFYING THEME	**NY.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
CATEGORY / CLUSTER / KEY IDEA		**Production and Distribution of Writing**
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.WHST.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD / CONCEPTUAL UNDERSTANDING	6-8.WHST.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

New York State Learning Standards and Core Curriculum

Technology Education

Grade **5** - Adopted: **1996**

STRAND / DOMAIN / UNIFYING THEME	**NY.5.**	**Technology: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.**

CATEGORY / CLUSTER / KEY IDEA	**5.1.**	**Engineering Design: Engineering design is an iterative process involving modeling and optimization used to develop technological solutions to problems within given constraints.**
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.1.	Students identify needs and opportunities for technical solutions from an investigation of situations of general or social interest.
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.3.	Students consider constraints and generate several ideas for alternative solutions, using group and individual ideation techniques (group discussion, brainstorming, forced connections, role play); defer judgment until a number of ideas have been generated; evaluate (critique) ideas; and explain why the chosen solution is optimal.
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.4.	Students develop plans, including drawings with measurements and details of construction, and construct a model of the solution, exhibiting a degree of craftsmanship.
STRAND / DOMAIN / UNIFYING THEME	**NY.5.**	**Technology: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.**
CATEGORY / CLUSTER / KEY IDEA	**5.4.**	**Technological Systems: Technological systems are designed to achieve specific results and produce outputs, such as products, structures, services, energy, or other systems.**
STANDARD / CONCEPTUAL UNDERSTANDING	5.4.2.	Students assemble, operate, and explain the operation of simple open- and closed-loop electrical, electronic, mechanical, and pneumatic systems.

New York State Learning Standards and Core Curriculum

Technology Education

Grade **6** - Adopted: **1996**

STRAND / DOMAIN / UNIFYING THEME	**NY.5.**	**Technology: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.**
CATEGORY / CLUSTER / KEY IDEA	**5.1.**	**Engineering Design: Engineering design is an iterative process involving modeling and optimization used to develop technological solutions to problems within given constraints.**
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.1.	Students identify needs and opportunities for technical solutions from an investigation of situations of general or social interest.
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.3.	Students consider constraints and generate several ideas for alternative solutions, using group and individual ideation techniques (group discussion, brainstorming, forced connections, role play); defer judgment until a number of ideas have been generated; evaluate (critique) ideas; and explain why the chosen solution is optimal.
STANDARD / CONCEPTUAL UNDERSTANDING	5.1.4.	Students develop plans, including drawings with measurements and details of construction, and construct a model of the solution, exhibiting a degree of craftsmanship.

STRAND / DOMAIN / UNIFYING THEME	**NY.5.**	**Technology: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.**
CATEGORY / CLUSTER / KEY IDEA	**5.4.**	**Technological Systems: Technological systems are designed to achieve specific results and produce outputs, such as products, structures, services, energy, or other systems.**
STANDARD / CONCEPTUAL UNDERSTANDING	5.4.2.	Students assemble, operate, and explain the operation of simple open- and closed-loop electrical, electronic, mechanical, and pneumatic systems.

North Carolina Standard Course of Study

Mathematics

Grade **5** - Adopted: **2017/IMPL 2018**

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

North Carolina Standard Course of Study

Mathematics

Grade **6** - Adopted: **2017/IMPL 2018**

CONTENT AREA / STRAND		Standards for Mathematical Practice
STRAND / ESSENTIAL STANDARD	MP.1.	Make sense of problems and persevere in solving them.

STRAND / ESSENTIAL STANDARD	MP.2.	Reason abstractly and quantitatively.
STRAND / ESSENTIAL STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND / ESSENTIAL STANDARD	MP.4.	Model with mathematics.
STRAND / ESSENTIAL STANDARD	MP.5.	Use appropriate tools strategically.
STRAND / ESSENTIAL STANDARD	MP.7.	Look for and make use of structure.
CONTENT AREA / STRAND		**Ratio and Proportional Relationships**
STRAND / ESSENTIAL STANDARD		**Understand ratio concepts and use ratio reasoning to solve problems.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	NC.6.RP.2.	Understand that ratios can be expressed as equivalent unit ratios by finding and interpreting both unit ratios in context.
CONTENT AREA / STRAND		**Ratio and Proportional Relationships**
STRAND / ESSENTIAL STANDARD		**Understand ratio concepts and use ratio reasoning to solve problems.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	**NC.6.RP.3.**	**Use ratio reasoning with equivalent whole-number ratios to solve real-world and mathematical problems by:**
CLARIFYING OBJECTIVE	NC.6.RP.3.a.	Creating and using a table to compare ratios.
CLARIFYING OBJECTIVE	NC.6.RP.3.b.	Finding missing values in the tables.
CONTENT AREA / STRAND		**Expressions and Equations**
STRAND / ESSENTIAL STANDARD		**Reason about and solve one-variable equations.**

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	NC.6.EE.5.	Use substitution to determine whether a given number in a specified set makes an equation true.

North Carolina Standard Course of Study

Science

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

CONTENT AREA / STRAND	**NC.6.E.**	**Earth Science**
STRAND / ESSENTIAL STANDARD		**Earth: Systems, Structures and Processes**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	**6.E.2.**	**Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.**
CLARIFYING OBJECTIVE	6.E.2.4.	Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship.

CONTENT AREA / STRAND	**NC.CC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Key Ideas and Details**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CONTENT AREA / STRAND	**NC.CC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Craft and Structure**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.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.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.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 AREA / STRAND	**NC.CC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Integration of Knowledge and Ideas**

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.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 AREA / STRAND	**NC.CC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Range of Reading and Level of Text Complexity**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.RST.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 AREA / STRAND	**NC.CC.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Text Types and Purposes**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	**6-8.WHST.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
CLARIFYING OBJECTIVE	6-8.WHST.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

CONTENT AREA / STRAND	**NC.CC.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND / ESSENTIAL STANDARD		**Production and Distribution of Writing**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.WHST.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	6-8.WHST.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

North Carolina Standard Course of Study

Technology Education

Grade **5** - Adopted: **2020 (ISTE-S)**

CONTENT AREA / STRAND		**Digital Learning Standards**

STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Grade **5** - Adopted: **2020**

CONTENT AREA / STRAND		**NC K-12 Computer Science Standards**
STRAND / ESSENTIAL STANDARD		**Grades 3-5 (Ages 8-11)**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		**Algorithms & Programming**
CLARIFYING OBJECTIVE		**Algorithms**

INDICATOR	35-AP-01.	Create multiple algorithms for the same task to determine which is the most accurate and efficient.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		**Grades 3-5 (Ages 8-11)**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		**Algorithms & Programming**
CLARIFYING OBJECTIVE		**Program Development**
INDICATOR	35-AP-12.	Describe choices made during program development using code comments, presentations, and demonstrations.

North Carolina Standard Course of Study

Technology Education

Grade **6** - Adopted: **2020 (ISTE-S)**

CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	**ISTE-S.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.**

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Grade **6** - Adopted: **2020**

CONTENT AREA / STRAND		**NC K-12 Computer Science Standards**
STRAND / ESSENTIAL STANDARD		**Grades 6-8 (Ages 11-14)**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		**Algorithms & Programming**
CLARIFYING OBJECTIVE		**Algorithms**
INDICATOR	68-AP-01.	Implement flowcharts and/or pseudocode to address complex problems as algorithms.

CONTENT AREA / STRAND		**NC K-12 Computer Science Standards**
STRAND / ESSENTIAL STANDARD		**Grades 6-8 (Ages 11-14)**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		**Algorithms & Programming**
CLARIFYING OBJECTIVE		**Modularity**
INDICATOR	68-AP-05.	Organize problems and subproblems into parts.

CONTENT AREA / STRAND		**NC K-12 Computer Science Standards**
STRAND / ESSENTIAL STANDARD		**Grades 6-8 (Ages 11-14)**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		**Algorithms & Programming**
CLARIFYING OBJECTIVE		**Program Development**

INDICATOR	68-AP-10.	Systematically test and refine programs using a range of test cases.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Grades 6-8 (Ages 11-14)
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Impacts of Computing
CLARIFYING OBJECTIVE		Social Interactions
INDICATOR	68-IC-05.	Collaborate with many contributors to create a computational artifact.

North Dakota Content Standards

Mathematics

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

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

North Dakota Content Standards

Mathematics

Grade **6** - Adopted: **2017**

CONTENT STANDARD		Standards for Mathematical Practice
BENCHMARK	MP.1	Make sense of problems and persevere in solving them.
BENCHMARK	MP.2	Reason abstractly and quantitatively.
BENCHMARK	MP.3	Construct viable arguments and critique the reasoning of others.
BENCHMARK	MP.4	Model with mathematics.
BENCHMARK	MP.5	Use appropriate tools strategically.

BENCHMARK	MP.7	Look for and make use of structure.

CONTENT STANDARD		**Ratios and Proportional Relationships**
BENCHMARK		**Understand ratio concepts and use ratio reasoning to solve problems.**
GRADE LEVEL EXPECTATION	**6.RP.3**	**Use tables of equivalent ratios, tape diagrams, double number line diagrams, and equations to reason about ratios and rates in real world and mathematical problems.**
INDICATOR	6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD		**Expressions and Equations**
BENCHMARK		**Reason about and solve one-variable equations and inequalities.**
GRADE LEVEL EXPECTATION	6.EE.5	Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

North Dakota Content Standards

Science

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

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**2**	**Developing and using models**
GRADE LEVEL EXPECTATION		Modeling in K-12 builds on prior experiences and progresses to include using and developing models (i.e., diagrams, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**4**	**Analyzing and interpreting data**
GRADE LEVEL EXPECTATION		Analyzing data in K-12 builds on prior experiences and progresses to collecting, recording, and sharing observations.

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**6**	**Constructing explanations and designing solutions**
GRADE LEVEL EXPECTATION		Constructing explanations and designing solutions in K-12 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

CONTENT STANDARD		**Life Science (LS)**
BENCHMARK	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
GRADE LEVEL EXPECTATION	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

CONTENT STANDARD		**Earth and Space Science (ESS)**
BENCHMARK	**5-ESS3.**	**Earth & Human Activity**
GRADE LEVEL EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CONTENT STANDARD		**Engineering & Technology (ET)**
BENCHMARK	**5-ET1.**	**Engineering & Technology**
GRADE LEVEL EXPECTATION	5-ET1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
GRADE LEVEL EXPECTATION	5-ET1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
GRADE LEVEL EXPECTATION	5-ET1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

North Dakota Content Standards

Science

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

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**2**	**Developing and using models**
GRADE LEVEL EXPECTATION		Modeling in K-12 builds on prior experiences and progresses to include using and developing models (i.e., diagrams, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**4**	**Analyzing and interpreting data**
GRADE LEVEL EXPECTATION		Analyzing data in K-12 builds on prior experiences and progresses to collecting, recording, and sharing observations.

CONTENT STANDARD		**Science and Engineering Practices**
BENCHMARK	**6**	**Constructing explanations and designing solutions**
GRADE LEVEL EXPECTATION		Constructing explanations and designing solutions in K-12 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

CONTENT STANDARD		**Earth and Space Science (ESS)**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**
GRADE LEVEL EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

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

CONTENT STANDARD		**Life Science (LS)**
BENCHMARK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GRADE LEVEL EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD		**Engineering & Technology (ET)**
BENCHMARK	**MS-ET1.**	**Engineering & Technology**
GRADE LEVEL EXPECTATION	MS-ET1-1.	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.
GRADE LEVEL EXPECTATION	MS-ET1-2.	Evaluate competing design solutions using systematic process to determine how well they meet the criteria and constraints of the problem.
GRADE LEVEL EXPECTATION	MS-ET1-4.	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.

North Dakota Content Standards

Technology Education

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

CONTENT STANDARD		**Computer Science and Cybersecurity Standards**
BENCHMARK		**Computational Thinking**
GRADE LEVEL EXPECTATION		**Problem Solving & Algorithms**
INDICATOR		**Strategies for understanding and solving problems.**
INDICATOR	5.PSA.1.	Create a sequence of instructions from a previous decomposed task.

CONTENT STANDARD		**Computer Science and Cybersecurity Standards**
BENCHMARK		**Computational Thinking**
GRADE LEVEL EXPECTATION		**Development & Design**
INDICATOR		**Design processes to create new, useful, and imaginative solutions to problems.**
INDICATOR	5.DD.1.	Continued growth independently or collaboratively creating programs that use sequencing, loops, and conditions.
INDICATOR	5.DD.2.	Create solutions to problems using a design method.

North Dakota Content Standards

Technology Education

Grade **6** - Adopted: **2012**

CONTENT STANDARD		**Library and Technology**
BENCHMARK		**Media and Technology Literacy**
GRADE LEVEL EXPECTATION		**Creative and Innovative Processes and Products**
INDICATOR	6-8.MTL.7.	Create unique products and processes by selecting digital resources, tools, and formats for a real-world task.

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

CONTENT STANDARD		**Computer Science and Cybersecurity Standards**
BENCHMARK		**Computational Thinking**
GRADE LEVEL EXPECTATION		**Problem Solving & Algorithms**
INDICATOR		**Strategies for understanding and solving problems.**
INDICATOR	6.PSA.1.	Identify and test an algorithm to solve a problem.

Ohio Learning Standards

Mathematics

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

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

Ohio Learning Standards

Mathematics

Grade **6** - Adopted: **2017**

DOMAIN / ACADEMIC CONTENT STANDARD	OH.MP.	Standards for Mathematical Practice

STANDARD / BENCHMARK	MP.1.	Make sense of problems and persevere in solving them.
STANDARD / BENCHMARK	MP.2.	Reason abstractly and quantitatively.
STANDARD / BENCHMARK	MP.3.	Construct viable arguments and critique the reasoning of others.
STANDARD / BENCHMARK	MP.4.	Model with mathematics.
STANDARD / BENCHMARK	MP.5.	Use appropriate tools strategically.
STANDARD / BENCHMARK	MP.7.	Look for and make use of structure.
DOMAIN / ACADEMIC CONTENT STANDARD	**OH.6.RP.**	**RATIOS AND PROPORTIONAL RELATIONSHIPS**
STANDARD / BENCHMARK		**Understand ratio concepts and use ratio reasoning to solve problems.**
BENCHMARK / GRADE LEVEL INDICATOR	**6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagramsG, double number line diagramsG, or equations.**
PROFICIENCY LEVEL	6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements; find missing values in the tables; and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
DOMAIN / ACADEMIC CONTENT STANDARD	**OH.6.EE.**	**EXPRESSIONS AND EQUATIONS**
STANDARD / BENCHMARK		**Reason about and solve one-variable equations and inequalities.**
BENCHMARK / GRADE LEVEL INDICATOR	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Ohio Learning Standards

Technology Education

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

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Society and Technology: The interconnectedness of technology, self, society and the natural world, specifically addressing the ethical, legal, political and global impact of technology.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 1:**	**Demonstrate an understanding of technology's impact on the advancement of humanity – economically, environmentally and ethically.**

PROFICIENCY LEVEL	3-5.ST.1.b.	Identify positive and negative impacts your use of personal technology and technology systems (e.g., agriculture, transportation, energy generation, water treatment) can have on your community.

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Society and Technology: The interconnectedness of technology, self, society and the natural world, specifically addressing the ethical, legal, political and global impact of technology.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 2:**	**Analyze the impact of communication and collaboration in both digital and physical environments.**

PROFICIENCY LEVEL	3-5.ST.2.c.	Identify the positive and negative impact the use of technology can have on relationships, communities and self.

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Society and Technology: The interconnectedness of technology, self, society and the natural world, specifically addressing the ethical, legal, political and global impact of technology.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 3:**	**Explain how technology, society, and the individual impact one another.**

PROFICIENCY LEVEL	3-5.ST.3.c.	Identify and discuss how the use of technology affects self and others in various ways.

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 1:**	**Define and describe technology, including its core concepts of systems, resources, requirements, processes, controls, optimization and trade-offs.**

PROFICIENCY LEVEL	3-5.DT.1.b.	Give examples of how requirements for a product can limit the design possibilities for that product.

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 2:**	**Identify a problem and use an engineering design process to solve the problem.**

PROFICIENCY LEVEL	3-5.DT.2.b.	Plan and implement a design process: identify a problem, think about ways to solve the problem, develop possible solutions, test and evaluate solution(s), present a possible solution, and redesign to improve the solution.

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 3:**	**Demonstrate that solutions to complex problems require collaboration, interdisciplinary understanding, and systems thinking.**
PROFICIENCY LEVEL	3-5.DT.3.b.	Explore and document connections between technology and other fields of study.

Grade **5** - Adopted: **2022**

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 5**
STANDARD / BENCHMARK		**COMPUTING SYSTEMS**
BENCHMARK / GRADE LEVEL INDICATOR		**Troubleshooting**
PROFICIENCY LEVEL	CS.T.5.a.	Diagnose problems and develop strategies to resolve technology issues.

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 5**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Algorithms**
PROFICIENCY LEVEL	ATP.A.5.a.	Evaluate a multi-step process to diagram the proper steps to solve a problem.

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 5**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Variables and Data Representation**
PROFICIENCY LEVEL	ATP.VDR.5.a.	Create a variable, a placeholder for storing a value, to understand how it is used in a multi-step process (i.e., algorithm).

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 5**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**

BENCHMARK / GRADE LEVEL INDICATOR		**Control Structures**
PROFICIENCY LEVEL	ATP.CS.5.a.	Create a program using sequences, events, loops and conditionals to solve a problem.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 5**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Modularity**
PROFICIENCY LEVEL	ATP.M.5.a.	Decompose (i.e., break down) the steps needed or not needed (i.e., abstraction) into precise sequences of instructions to design an algorithm.

Ohio Learning Standards

Technology Education

Grade **6** - Adopted: **2017**

DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Society and Technology: The interconnectedness of technology, self, society and the natural world, specifically addressing the ethical, legal, political and global impact of technology.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 2:**	**Analyze the impact of communication and collaboration in both digital and physical environments.**
PROFICIENCY LEVEL	6-8.ST.2.b.	Explain the positive and negative impact the use of technology can have on personal, professional and community relationships.
DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 1:**	**Define and describe technology, including its core concepts of systems, resources, requirements, processes, controls, optimization and trade-offs.**
PROFICIENCY LEVEL	6-8.DT.1.c.	Define and categorize the requirements of a design as either criteria or constraints.
PROFICIENCY LEVEL	6-8.DT.1.f.	Give examples of how trade-offs must occur when optimizing a design in order to maintain design requirements.
DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**

BENCHMARK / GRADE LEVEL INDICATOR	**Topic 2:**	**Identify a problem and use an engineering design process to solve the problem.**
PROFICIENCY LEVEL	6-8.DT.2.a.	Apply a complete design process to solve an identified individual or community problem: research, develop, test, evaluate and present several possible solutions, and redesign to improve the solution.
PROFICIENCY LEVEL	6-8.DT.2.d.	Consider multiple factors, including criteria and constraints, (e.g. research, cost, time, materials, feedback, safety, etc.) to justify decisions when developing products and systems to solve problems.
PROFICIENCY LEVEL	6-8.DT.2.e.	Identify and explain why effective designs develop from non-linear, flexible application of the design process.
DOMAIN / ACADEMIC CONTENT STANDARD		**Ohio Learning Standards in Technology**
STANDARD / BENCHMARK		**Design and Technology: Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.**
BENCHMARK / GRADE LEVEL INDICATOR	**Topic 3:**	**Demonstrate that solutions to complex problems require collaboration, interdisciplinary understanding, and systems thinking.**
PROFICIENCY LEVEL	6-8.DT.3.a.	Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

Grade **6** - Adopted: **2022**

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**COMPUTING SYSTEMS**
BENCHMARK / GRADE LEVEL INDICATOR		**Troubleshooting**
PROFICIENCY LEVEL	CS.T.6.a.	Use a systematic process to identify and evaluate the source of a routine computing problem. Select the best solution to solve the computing problem and communicate the solution to others.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Algorithms**
PROFICIENCY LEVEL	ATP.A.6.a.	Compare and refine multiple algorithms for the same task to determine which is the most efficient.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**

BENCHMARK / GRADE LEVEL INDICATOR		**Variables and Data Representation**
PROFICIENCY LEVEL	ATP.VDR.6.a.	Identify unknown values that need to be represented by a variable within a multi-step process.
PROFICIENCY LEVEL	ATP.VDR.6.b.	Create variables and use them within a multi-step process.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Control Structures**
PROFICIENCY LEVEL	ATP.CS.6.a.	Identify and trace decisions and loops that exist in a multi-step process within a program.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Modularity**
PROFICIENCY LEVEL	ATP.M.6.a.	Decompose problems into parts to facilitate the design, implementation and review of programs.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ALGORITHMIC THINKING AND PROGRAMMING**
BENCHMARK / GRADE LEVEL INDICATOR		**Program Development**
PROFICIENCY LEVEL	ATP.PD.6.a.	Write code that utilizes algorithms, variables and control structures to solve problems or as a creative expression.
DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ARTIFICIAL INTELLIGENCE**
BENCHMARK / GRADE LEVEL INDICATOR		**Natural Interactions**

PROFICIENCY LEVEL	AI.NI.6.a.	Individually and collaboratively compare language processing algorithms to solve a problem based on a given criteria (e.g., time, resource, accessibility).

Oklahoma Academic Standards

Mathematics

Grade **5** - Adopted: **2022**

CONTENT STANDARD / COURSE		Mathematical Actions and Processes
STRAND / STANDARD		Develop a Deep and Flexible Conceptual Understanding
STRAND / STANDARD		Develop Accurate and Appropriate Procedural Fluency
STRAND / STANDARD		Develop Strategies for Problem Solving
STRAND / STANDARD		Develop Mathematical Reasoning
STRAND / STANDARD		Develop a Productive Mathematical Disposition
STRAND / STANDARD		Develop the Ability to Make Conjectures, Model, and Generalize
STRAND / STANDARD		Develop the Ability to Communicate Mathematically

Oklahoma Academic Standards

Mathematics

Grade **6** - Adopted: **2022**

CONTENT STANDARD / COURSE		Mathematical Actions and Processes
STRAND / STANDARD		Develop a Deep and Flexible Conceptual Understanding
STRAND / STANDARD		Develop Accurate and Appropriate Procedural Fluency
STRAND / STANDARD		Develop Strategies for Problem Solving
STRAND / STANDARD		Develop Mathematical Reasoning
STRAND / STANDARD		Develop a Productive Mathematical Disposition

STRAND / STANDARD		Develop the Ability to Make Conjectures, Model, and Generalize
STRAND / STANDARD		Develop the Ability to Communicate Mathematically

Oklahoma Academic Standards

Science

Grade **5** - Adopted: **2020**

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards for Science**
STRAND / STANDARD		**From Molecules to Organisms: Structure and Processes (LS1)**
OBJECTIVE	5.LS1.1	Support an argument that plants get the materials they need for growth chiefly from air and water.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards for Science**
STRAND / STANDARD		**Earth and Human Activity (ESS3)**
OBJECTIVE	5.ESS3.1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environments.

Oklahoma Academic Standards

Technology Education

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

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Creating Computational Artifacts**
SKILL / CONCEPT		Develop computational artifacts to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to the community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Developing and Using Abstractions**
SKILL / CONCEPT		Identify patterns and extract common features from specific examples to create generalizations. Students will manage complexity by using generalized solutions and parts of solutions designed for broad reuse to simplify the development process.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**

STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Developing a Productive Computing Environment**
SKILL / CONCEPT		Understand the contexts in which people operate and consider the needs of different users during the design process. Students will address the needs of different end users to produce artifacts with broad accessibility and usability and to meet the needs of all potential end users (including themselves).
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Recognizing and Defining Computational Problems**
SKILL / CONCEPT		Recognize appropriate and worthwhile opportunities to apply computation. Students will work to solve a problem by defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**5**	**Fifth Grade (5)**
OBJECTIVE	**5.CS.**	**Computing Systems (CS)**
SKILL / CONCEPT	**5.CS.T.**	**Troubleshooting (T)**
SKILL	5.CS.T.01.	Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use. Discuss problems with peers and adults, apply strategies for solving these problems and explain why the strategies should work.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**5**	**Fifth Grade (5)**
OBJECTIVE	**5.AP.**	**Algorithms & Programming (AP)**
SKILL / CONCEPT	**5.AP.A.**	**Algorithms (A)**
SKILL	5.AP.A.01.	Model, compare and refine multiple algorithms for the same task and determine which is the most efficient.
CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**5**	**Fifth Grade (5)**
OBJECTIVE	**5.AP.**	**Algorithms & Programming (AP)**
SKILL / CONCEPT	**5.AP.PD.**	**Program Development (PD)**

SKILL	5.AP.PD.01.	Use an iterative process to plan the development of a program that includes others' perspectives and user preferences while solving simple problems.
SKILL	5.AP.PD.04.	Communicate and explain program development choices using comments, presentations, and demonstrations.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**5**	**Fifth Grade (5)**
OBJECTIVE	**5.IC.**	**Impacts of Computing (IC)**
SKILL / CONCEPT	**5.IC.CU.**	**Culture (CU)**
SKILL	5.IC.CU.02.	Develop, test, and refine digital artifacts to improve accessibility and usability.

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

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.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.**
OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.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.**
OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.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.**
OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Oklahoma Academic Standards

Technology Education

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

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Creating Computational Artifacts**
SKILL / CONCEPT		Develop computational artifacts to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to the community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Developing and Using Abstractions**
SKILL / CONCEPT		Identify patterns and extract common features from specific examples to create generalizations. Students will manage complexity by using generalized solutions and parts of solutions designed for broad reuse to simplify the development process.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Developing a Productive Computing Environment**
SKILL / CONCEPT		Understand the contexts in which people operate and consider the needs of different users during the design process. Students will address the needs of different end users to produce artifacts with broad accessibility and usability and to meet the needs of all potential end users (including themselves).

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD		**Computer Science Practices**
OBJECTIVE		**Recognizing and Defining Computational Problems**
SKILL / CONCEPT		Recognize appropriate and worthwhile opportunities to apply computation. Students will work to solve a problem by defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**6**	**Sixth Grade (6)**
OBJECTIVE	**6.CS.**	**Computing Systems (CS)**

SKILL / CONCEPT	**6.CS.T.**	**Troubleshooting (T)**
SKILL	6.CS.T.01.	Identify and resolve software and hardware problems with computing devices and their components involving settings and connections.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**6**	**Sixth Grade (6)**
OBJECTIVE	**6.AP.**	**Algorithms & Programming (AP)**
SKILL / CONCEPT	**6.AP.A.**	**Algorithms (A)**
SKILL	6.AP.A.01.	Use an existing algorithm in natural language or pseudocode to solve complex problems.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**6**	**Sixth Grade (6)**
OBJECTIVE	**6.AP.**	**Algorithms & Programming (AP)**
SKILL / CONCEPT	**6.AP.PD.**	**Program Development (PD)**
SKILL	6.AP.PD.04.	Break down tasks and follow an individual timeline when developing a computational artifact.

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

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.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.**
OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.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.**
OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**

STRAND / STANDARD	ISTE-S.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.
OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Oregon Academic Content Standards

Mathematics

Grade **5** - Adopted: **2021**

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

Oregon Academic Content Standards

Mathematics

Grade **6** - Adopted: **2021**

STANDARD / CONTENT AREA		Mathematical Practice Standards
CONTENT STANDARD / PROFICIENCY	1	Make sense of problems and persevere in solving them.

CONTENT STANDARD / PROFICIENCY	2	Reason abstractly and quantitatively.
CONTENT STANDARD / PROFICIENCY	3	Construct viable arguments and critique the reasoning of others.
CONTENT STANDARD / PROFICIENCY	4	Model with mathematics.
CONTENT STANDARD / PROFICIENCY	5	Use appropriate tools strategically.
CONTENT STANDARD / PROFICIENCY	7	Look for and make use of structure.

STANDARD / CONTENT AREA		**Grade 6 Standards**
CONTENT STANDARD / PROFICIENCY	**6.AEE.**	**Algebraic Reasoning: Expressions and Equations (6.AEE)**
BENCHMARK / STRAND	**6.AEE.B.**	**Reason about and solve one-variable equations and inequalities.**
EXPECTATION / BENCHMARK	6.AEE.B.4.	Understand solving an equation or inequality as a process of answering which values from a specified set, if any, make the equation or inequality true. Use substitution to determine which number(s) in a given set make an equation or inequality true.

Oregon Academic Content Standards

Science

Grade **5** - Adopted: **2022**

STANDARD / CONTENT AREA	**OR.5-LS1.**	**From Molecules to Organisms: Structures and Processes**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STANDARD / CONTENT AREA	**OR.5-ESS3.**	**Earth and Human Activity**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STANDARD / CONTENT AREA	**OR.3-5-ETS1.**	**Engineering Design**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
BENCHMARK / STRAND	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
BENCHMARK / STRAND	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Oregon Academic Content Standards

Science

Grade **6** - Adopted: **2022**

STANDARD / CONTENT AREA	**OR.MS-ESS3.**	**Earth and Human Activity**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

STANDARD / CONTENT AREA	**OR.MS-ETS1.**	**Engineering Design**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	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 / STRAND	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 / STRAND	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 / CONTENT AREA	**OR.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Key Ideas and Details**
BENCHMARK / STRAND	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.

BENCHMARK / STRAND	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STANDARD / CONTENT AREA	**OR.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Craft and Structure**
BENCHMARK / STRAND	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.
BENCHMARK / STRAND	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.
STANDARD / CONTENT AREA	**OR.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Integration of Knowledge and Ideas**
BENCHMARK / STRAND	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
BENCHMARK / STRAND	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.
STANDARD / CONTENT AREA	**OR.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Range of Reading and Level of Text Complexity**
BENCHMARK / STRAND	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.
STANDARD / CONTENT AREA	**OR.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Text Types and Purposes**
BENCHMARK / STRAND	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
EXPECTATION / BENCHMARK	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
STANDARD / CONTENT AREA	**OR.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONTENT STANDARD / PROFICIENCY		**Production and Distribution of Writing**

BENCHMARK / STRAND	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
BENCHMARK / STRAND	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.

Pennsylvania Core and Academic Standards

Mathematics

Grade **5** - Adopted: **2014**

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

Pennsylvania Core and Academic Standards

Mathematics

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

SUBJECT / STANDARD AREA	PA.CC.MP.	Standards for Mathematical Practice
STANDARD AREA / STATEMENT	CC.MP.1.	Make sense of problems and persevere in solving them.
STANDARD AREA / STATEMENT	CC.MP.2.	Reason abstractly and quantitatively.
STANDARD AREA / STATEMENT	CC.MP.3.	Construct viable arguments and critique the reasoning of others.

STANDARD AREA / STATEMENT	CC.MP.4.	Model with mathematics.
STANDARD AREA / STATEMENT	CC.MP.5.	Use appropriate tools strategically.
STANDARD AREA / STATEMENT	CC.MP.7.	Look for and make use of structure.
SUBJECT / STANDARD AREA	**PA.CC.2.2.6.**	**Algebraic Concepts**
STANDARD AREA / STATEMENT	**CC.2.2.6.B.**	**Expressions and Equations**
STANDARD	CC.2.2.6.B.2.	Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.

Pennsylvania Core and Academic Standards

Science

Grade **5** - Adopted: **2010**

SUBJECT / STANDARD AREA	**PA.SI.**	**Science as Inquiry**
STANDARD AREA / STATEMENT	SI.5.	Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.
STANDARD AREA / STATEMENT	SI.6.	Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.
STANDARD AREA / STATEMENT	SI.9.	Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.A.**	**The Scope of Technology**
DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
DESCRIPTOR / STANDARD	3.4.5.A2.	Understand that a subsystem is a system that operates as part of a larger system.

DESCRIPTOR / STANDARD	3.4.5.A3.	Describe how technologies are often combined.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.B.**	**Technology and Society**
DESCRIPTOR / STANDARD	3.4.5.B1.	Explain how the use of technology can have unintended consequences.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.C.**	**Technology and Engineering Design**
DESCRIPTOR / STANDARD	3.4.5.C1.	Explain how the design process is a purposeful method of planning practical solutions to problems.
DESCRIPTOR / STANDARD	3.4.5.C2.	Describe how design, as a dynamic process of steps, can be performed in different sequences and repeated.
DESCRIPTOR / STANDARD	3.4.5.C3.	Identify how invention and innovation are creative ways to turn ideas into real things.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.D.**	**Abilities for a Technological World**
DESCRIPTOR / STANDARD	3.4.5.D1.	Identify ways to improve a design solution.
DESCRIPTOR / STANDARD	3.4.5.D3.	Determine if the human use of a product or system creates positive or negative results.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.E.**	**The Designed World**
DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.4.**	**Agriculture and Society**
STANDARD	4.4.5.C.	Investigate the factors influencing plant and animal growth. (e.g., soil, water, nutrients, and light)

Pennsylvania Core and Academic Standards

Science

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

SUBJECT / STANDARD AREA	**PA.SI.**	**Science as Inquiry**
STANDARD AREA / STATEMENT	SI.5.	Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.
STANDARD AREA / STATEMENT	SI.6.	Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.
STANDARD AREA / STATEMENT	SI.9.	Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.A.**	**The Scope of Technology**
DESCRIPTOR / STANDARD	3.4.6.A1.	Identify how creative thinking and economic and cultural influences shape technological development.
DESCRIPTOR / STANDARD	3.4.6.A2.	Describe how systems thinking involves considering how every part relates to others.
DESCRIPTOR / STANDARD	3.4.6.A3.	Explain how knowledge from other fields of study (STEM) integrate to create new technologies.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.B.**	**Technology and Society**

DESCRIPTOR / STANDARD	3.4.6.B2.	Describe how technologies can be used to repair damage caused by natural disasters and to break down waste from the use of various products and systems.
DESCRIPTOR / STANDARD	3.4.6.B4.	Demonstrate how new technologies are developed based on people's needs, wants, values, and/or interests.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.C.**	**Technology and Engineering Design**
DESCRIPTOR / STANDARD	3.4.6.C1.	Recognize that requirements for a design include such factors as the desired elements and features of a product or system or the limits that are placed on the design.
DESCRIPTOR / STANDARD	3.4.6.C2.	Show how models are used to communicate and test design ideas and processes.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.D.**	**Abilities for a Technological World**
DESCRIPTOR / STANDARD	3.4.6.D1.	Apply a design process to solve problems beyond the laboratory classroom.
DESCRIPTOR / STANDARD	3.4.6.D2.	Use computers appropriately to access and organize and apply information.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.E.**	**The Designed World**
DESCRIPTOR / STANDARD	3.4.6.E2.	Identify how emerging agricultural technologies have an effect on ecosystem dynamics and human/animal food resources.
SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.4.**	**Agriculture and Society**
STANDARD	4.4.6.A.	Explain how different plants and animals in the United States have specific growing requirements related to climate and soil conditions.

STANDARD	4.4.6.B.	Analyze how soil types and geographic regions have impacted agriculture in Pennsylvania.

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

SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Key Ideas and Details**
STANDARD	CC.3.5.6-8.B.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
STANDARD	CC.3.5.6-8.C.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Craft and Structure**
STANDARD	CC.3.5.6-8.D.	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	CC.3.5.6-8.E.	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.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Integration of Knowledge and Ideas**
STANDARD	CC.3.5.6-8.G.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
STANDARD	CC.3.5.6-8.I.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Range and Level of Complex Texts**
STANDARD	CC.3.5.6-8.J.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**

STANDARD AREA / STATEMENT		**Text Types and Purposes**
STANDARD	**CC.3.6.6-8.B.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
DESCRIPTOR / STANDARD	CC.3.6.6-8.B.4.	Use precise language and domain-specific vocabulary to inform about or explain the topic.
SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**
STANDARD AREA / STATEMENT		**Production and Distribution of Writing**
STANDARD	CC.3.6.6-8.C.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD	CC.3.6.6-8.E.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Pennsylvania Core and Academic Standards

Technology Education

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

SUBJECT / STANDARD AREA	**CSTA.1B.**	**Level 1B (Ages 8-11)**
STANDARD AREA / STATEMENT	**1B-AP.**	**Algorithms & Programming**
STANDARD		**Program Development**
DESCRIPTOR / STANDARD	1B-AP-13.	Use an iterative process to plan the development of a program by including others'' perspectives and considering user preferences. (P1.1, P5.1)
DESCRIPTOR / STANDARD	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)
DESCRIPTOR / STANDARD	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)
SUBJECT / STANDARD AREA	**CSTA.1B.**	**Level 1B (Ages 8-11)**
STANDARD AREA / STATEMENT	**1B-IC.**	**Impacts of Computing**
STANDARD		**Social Interactions**
DESCRIPTOR / STANDARD	1B-IC-20.	Seek diverse perspectives for the purpose of improving computational artifacts. (P1.1)

Pennsylvania Core and Academic Standards

Technology Education

Grade **6** - Adopted: **2017**

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Algorithms**
DESCRIPTOR / STANDARD	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Modularity**
DESCRIPTOR / STANDARD	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-IC.**	**Impacts of Computing**
STANDARD		**Social Interactions**
DESCRIPTOR / STANDARD	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P2.4, P5.2)