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

How Wind Turbines Capture Kinetic Energy

Nebraska Content Area Standards

Mathematics

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

CONTENT STANDARD		Grade 5 Standards
STRAND	**5.D.**	**DATA: Students will solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas.**
INDICATOR	**5.D.2.**	**Analyze Data and Interpret Results: Students will analyze the data and interpret the results.**
STRAND	5.D.2.a.	Represent, analyze, and solve authentic problems using information presented in one or more tables or line plots including whole numbers and fractions.

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.1.**	**Ratios and Rates: Students will understand the concept of ratios and unit rates, use language to describe the relationship between two quantities, and use ratios and unit rates to solve authentic situations.**
STRAND	6.R.1.d.	Convert among fractions, decimals, and percents using multiple representations.

CONTENT STANDARD		Grade 6 Standards
STRAND	**6.D.**	**DATA: Students will solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas.**
INDICATOR	**6.D.1.**	**Data Collection and Statistical Methods: Students will formulate statistical investigative questions, collect data, and organize data.**
STRAND		No additional indicators at this level.

CONTENT STANDARD		Grade 6 Standards
STRAND	**6.D.**	**DATA: Students will solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas.**
INDICATOR	**6.D.2.**	**Analyze Data and Interpret Results: Students will represent and analyze the data and interpret the results.**
STRAND	6.D.2.b.	Solve problems using information presented in dot plots, box-and-whisker plots, histograms, and circle graphs.

Nebraska Content Area Standards

Science

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

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.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.
INDICATOR	SC.6.4.1.D.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

Nebraska Content Area Standards

Technology Education

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

CONTENT STANDARD		**NEBRASKA K-12 TECHNOLOGY Scope & Sequence**
STRAND		**PRODUCTIVITY APPLICATIONS/TOOLS**
INDICATOR		**SPREADSHEETS STANDARDS**
STRAND		Enter and edit data and perform calculations using formulas.
STRAND		Demonstrate and understanding of recording, organizing, and graphing information.
STRAND		Use mathematical symbols appropriately.

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).
STRAND		Create and modify animations, and present work to others.

Nebraska Content Area Standards

Technology Education

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

CONTENT STANDARD		NEBRASKA K-12 TECHNOLOGY Scope & Sequence
STRAND		**PRODUCTIVITY APPLICATIONS/TOOLS**
INDICATOR		**SPREADSHEETS STANDARDS**
STRAND		Enter and edit data and perform calculations using formulas.
STRAND		Demonstrate and understanding of recording, organizing, and graphing information.
STRAND		Use mathematical symbols appropriately.
STRAND		Enter formulas and functions in spreadsheet applications.

CONTENT STANDARD		NEBRASKA K-12 TECHNOLOGY Scope & Sequence
STRAND		**COMPUTER SCIENCE/PROGRAMMING**
INDICATOR		**COMPUTATIONAL THINKING STANDARDS**
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).
STRAND		Create and modify animations, and present work to others.
STRAND		Write programs using text-based programming languages.

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.

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

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.

Nevada Academic Content Standards

Science

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

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

CONTENT STANDARD	**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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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.6-8.9.	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	P1.3.	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.

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.
GRADE LEVEL EXPECTATION	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

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 INTEGRATED TECHNOLOGY**
STRAND / INDICATOR		**Knowledge Constructor**
INDICATOR / GRADE LEVEL EXPECTATION	5.KC.D.1.	Propose solutions to real-world problems using collected data and digital tools.

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	P1.3.	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.
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.
GRADE LEVEL EXPECTATION	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.
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		**Algorithms and Programming**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.AP.V.2.	Create clearly named variables that represent different data types and perform operations on their values.
INDICATOR / GRADE LEVEL EXPECTATION	6-8.AP.C.1.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.
INDICATOR / GRADE LEVEL EXPECTATION	6-8.AP.PD.1.	Design meaningful solutions for others, incorporating data from collaborative team members and the end user, to meet the end user's needs.
CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for COMPUTER SCIENCE**
STRAND / INDICATOR		**Data and Analysis**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.DA.IM.1.	Refine computational models based on the reliability and validity of the data they generate.
CONTENT STANDARD		**NEVADA ACADEMIC CONTENT STANDARDS for INTEGRATED TECHNOLOGY**
STRAND / INDICATOR		**Knowledge Constructor**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.KC.D.1.	Explore real-world issues and problems through inquiry and analysis, develop ideas, actively create solutions for them, and evaluate and revise through the use of digital tools.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for INTEGRATED TECHNOLOGY
STRAND / INDICATOR		**Innovative Designer**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.ID.A.1.	Engage in a design process and employ it to inquire and analyze, generate ideas, create innovative products or solve authentic problems, and evaluate the process to revise if needed.
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.

CONTENT STANDARD		NEVADA ACADEMIC CONTENT STANDARDS for INTEGRATED TECHNOLOGY
STRAND / INDICATOR		**Global Collaborator**
INDICATOR / GRADE LEVEL EXPECTATION	6-8.GC.D.1.	Select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues.

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.

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

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.

New Hampshire College and Career Ready Standards

Science

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

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
EXPECTATION	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.b.	Mathematics

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.b.	Numeracy

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-09.	Create programs that use variables to store and modify data.
GRADE LEVEL EXPECTATION	1B-AP-10.	Create programs that include sequences, events, loops, and conditionals.

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.b.	Mathematics

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.b.	Numeracy

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		**Data & Analysis**
GRADE LEVEL EXPECTATION	2-DA-09.	Refine computational models based on the data they have generated.

STRAND / STANDARD		**Computer Science**

STANDARD / GLE		Algorithms & Programming
GRADE LEVEL EXPECTATION	2-AP-11.	Create clearly named variables that represent different data types and perform operations on their values.
GRADE LEVEL EXPECTATION	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

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.

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

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.

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.

New Jersey Student Learning Standards

Science

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

CONTENT AREA / STANDARD	**MS-PS.**	**Physical Science**
STRAND	**MS-PS3:**	**Energy**
CONTENT STATEMENT	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
CONTENT STATEMENT	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
CONTENT AREA / STANDARD	**MS-ESS.**	**Earth and Space Science**
STRAND	**MS-ESS3:**	**Earth and Human Activity**
CONTENT STATEMENT	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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		**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		Identify complex, interdisciplinary, real-world problems that can be solved computationally.
CUMULATIVE PROGRESS INDICATOR		Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.

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		Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
CUMULATIVE PROGRESS INDICATOR		Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

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	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Networks and the Internet**
CONTENT STATEMENT		**Information needs a physical or wireless path to travel to be sent and received.**

CUMULATIVE PROGRESS INDICATOR	8.1.5.NI.1:	Develop models that successfully transmit and receive information using both wired and wireless methods.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Programming languages provide variables, which are used to store and modify data.**

CUMULATIVE PROGRESS INDICATOR	8.1.5.AP.2:	Create programs that use clearly named variables to store and modify data.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals).**

CUMULATIVE PROGRESS INDICATOR	8.1.5.AP.3:	Create programs that include sequences, events, loops, and conditionals.

CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Individuals develop programs using an iterative process involving design, implementation, testing, and review.**

CUMULATIVE PROGRESS INDICATOR	8.1.5.AP.6:	Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.

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		**Effects of Technology on the Natural World**
CONTENT STATEMENT		**The technology developed for the human designed world can have unintended consequences for the environment. Technology must be continually developed and made more efficient to reduce the need for non-renewable resources.**
CUMULATIVE PROGRESS INDICATOR	8.2.5.ETW.4:	Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.
CUMULATIVE PROGRESS INDICATOR	8.2.5.ETW.5:	Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

New Jersey Student Learning Standards

Technology Education

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

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		Identify complex, interdisciplinary, real-world problems that can be solved computationally.
CUMULATIVE PROGRESS INDICATOR		Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.

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		Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
CUMULATIVE PROGRESS INDICATOR		Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

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	**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.
CUMULATIVE PROGRESS INDICATOR	8.1.8.DA.6:	Analyze climate change computational models and propose refinements.
CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Programmers create variables to store data values of different types and perform appropriate operations on their values.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.AP.2:	Create clearly named variables that represent different data types and perform operations on their values.
CONTENT AREA / STANDARD	**8.1.**	**Computer Science and Design Thinking – Computer Science**
STRAND		**Algorithms & Programming**
CONTENT STATEMENT		**Control structures are selected and combined in programs to solve more complex problems.**
CUMULATIVE PROGRESS INDICATOR	8.1.8.AP.3:	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

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.7:	Design programs, incorporating existing code, media, and libraries, and give attribution.

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.3:	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

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.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		**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.4:	Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.

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

New Mexico Content Standards

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.

New Mexico Content Standards

Science

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

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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.1B.**	**Level 1B (Ages 8-11)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**1B-NI.**	**Networks & The Internet**
PERFORMANCE STANDARD / INDICATOR		**Cybersecurity**
INDICATOR	1B-NI-05.	Discuss real-world cybersecurity problems and how personal information can be protected. (P3.1)

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		**Variables**
INDICATOR	1B-AP-09.	Create programs that use variables to store and modify data. (P5.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**1B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Control**
INDICATOR	1B-AP-10.	Create programs that include sequences, events, loops, and conditionals. (P5.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.1 B.**	**Level 1B (Ages 8-11)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**1B-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)

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-DA.**	**Data & Analysis**
PERFORMANCE STANDARD / INDICATOR		**Inference & Models**
INDICATOR	2-DA-09.	Refine computational models based on the data they have generated. (P5.3, P4.4)

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

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

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

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)

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

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.

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.

New York State Learning Standards and Core Curriculum

Science

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

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.4.	Energy
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
STANDARD / CONCEPTUAL UNDERSTANDING	MS-PS3-5.	Construct, use, and present an argument to support the claim that when work is done on or by a system, the energy of the system changes as energy is transferred to or from the system.

STRAND / DOMAIN / UNIFYING THEME	NY.MS.13.	Earth's Systems
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
STANDARD / CONCEPTUAL UNDERSTANDING	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geologic processes.

STRAND / DOMAIN / UNIFYING THEME	**NY.MS.15.**	**Human Impacts**
CATEGORY / CLUSTER / KEY IDEA		**Students who demonstrate understanding can:**
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.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.2.**	**Information Systems: Students will access, generate, process, and transfer information using appropriate technologies.**
CATEGORY / CLUSTER / KEY IDEA	**2.1.**	**Information Systems: Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.**
STANDARD / CONCEPTUAL UNDERSTANDING	2.1.5.	Students use simple modeling programs to make predictions.
STRAND / DOMAIN / UNIFYING THEME	**NY.2.**	**Information Systems: Students will access, generate, process, and transfer information using appropriate technologies.**
CATEGORY / CLUSTER / KEY IDEA	**2.3.**	**Information Systems: Information technology can have positive and negative impacts on society, depending upon how it is used.**
STANDARD / CONCEPTUAL UNDERSTANDING	2.3.2.	Students describe applications of information technology in mathematics, science, and other technologies that address needs and solve problems in the community.
STRAND / DOMAIN / UNIFYING THEME	**NY.7.**	**Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.**
CATEGORY / CLUSTER / KEY IDEA	**7.1.**	**Connections: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.**
STANDARD / CONCEPTUAL UNDERSTANDING	7.1.3.	Students design solutions to problems involving a familiar and real context, investigate related science concepts to inform the solution, and use mathematics to model, quantify, measure, and compute.
STANDARD / CONCEPTUAL UNDERSTANDING	7.1.4.	Students observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions.

STRAND / DOMAIN / UNIFYING THEME	**NY.7.**	**Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.**
CATEGORY / CLUSTER / KEY IDEA	**7.2.**	**Strategies: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.**
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.1.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to work effectively (Contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identify and managing responsibilities of team members; and staying on task, whether working alone or as part of a group.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.2.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to gather and process information (Accessing information from printed media, electronic data bases, and community resources and using the information to develop a definition of the problem and to research possible solutions.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.3.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to generate and analyze ideas (Developing ideas for proposed solutions, investigating ideas, collecting data, and showing relationships and patterns in the data.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.4.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to observe common themes (Observing examples of common unifying themes, applying them to the problem, and using them to better understand the dimensions of the problem.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.5.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to realize ideas (Constructing components or models, arriving at a solution, and evaluating the result.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.6.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to present results (Using a variety of media to present the solution and to communicate the results.)

New York State Learning Standards and Core Curriculum

Technology Education

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

STRAND / DOMAIN / UNIFYING THEME	**NY.2.**	**Information Systems: Students will access, generate, process, and transfer information using appropriate technologies.**
CATEGORY / CLUSTER / KEY IDEA	**2.1.**	**Information Systems: Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.**
STANDARD / CONCEPTUAL UNDERSTANDING	2.1.5.	Students use simple modeling programs to make predictions.
STRAND / DOMAIN / UNIFYING THEME	**NY.2.**	**Information Systems: Students will access, generate, process, and transfer information using appropriate technologies.**

CATEGORY / CLUSTER / KEY IDEA	**2.3.**	**Information Systems: Information technology can have positive and negative impacts on society, depending upon how it is used.**
STANDARD / CONCEPTUAL UNDERSTANDING	2.3.2.	Students describe applications of information technology in mathematics, science, and other technologies that address needs and solve problems in the community.
STRAND / DOMAIN / UNIFYING THEME	**NY.7.**	**Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.**
CATEGORY / CLUSTER / KEY IDEA	**7.1.**	**Connections: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.**
STANDARD / CONCEPTUAL UNDERSTANDING	7.1.3.	Students design solutions to problems involving a familiar and real context, investigate related science concepts to inform the solution, and use mathematics to model, quantify, measure, and compute.
STANDARD / CONCEPTUAL UNDERSTANDING	7.1.4.	Students observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions.
STRAND / DOMAIN / UNIFYING THEME	**NY.7.**	**Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.**
CATEGORY / CLUSTER / KEY IDEA	**7.2.**	**Strategies: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.**
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.1.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to work effectively (Contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identify and managing responsibilities of team members; and staying on task, whether working alone or as part of a group.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.2.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to gather and process information (Accessing information from printed media, electronic data bases, and community resources and using the information to develop a definition of the problem and to research possible solutions.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.3.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to generate and analyze ideas (Developing ideas for proposed solutions, investigating ideas, collecting data, and showing relationships and patterns in the data.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.4.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to observe common themes (Observing examples of common unifying themes, applying them to the problem, and using them to better understand the dimensions of the problem.)
STANDARD / CONCEPTUAL UNDERSTANDING	7.2.5.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to realize ideas (Constructing components or models, arriving at a solution, and evaluating the result.)

STANDARD / CONCEPTUAL UNDERSTANDING	7.2.6.	Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to present results (Using a variety of media to present the solution and to communicate the results.)

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.

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.

North Carolina Standard Course of Study

Science

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

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.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.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.c.	Students develop, test and refine prototypes as part of a cyclical design process.
CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.6.**	**Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.6.c.	Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.7.**	**Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.7.b.	Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.7.d.	Students explore local and global issues and use collaborative technologies to work with others to investigate 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		**Computing Systems**
CLARIFYING OBJECTIVE		**Hardware & Software**
INDICATOR	35-CS-02.	Model how computer hardware and software work together as a system to accomplish tasks.

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		Variables
INDICATOR	35-AP-02.	Create programs that use variables to store and modify data.

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		Control
INDICATOR	35-AP-03.	Construct programs that include sequences.
INDICATOR	35-AP-04.	Construct programs using simple loops.
INDICATOR	35-AP-05.	Construct programs that implement conditionals.

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.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.c.	Students develop, test and refine prototypes as part of a cyclical design process.
CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.6.**	**Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.6.c.	Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
CONTENT AREA / STRAND		**Digital Learning Standards**
STRAND / ESSENTIAL STANDARD	**ISTE-S.7.**	**Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.7.b.	Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.7.d.	Students explore local and global issues and use collaborative technologies to work with others to investigate 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		**Data & Analysis**
CLARIFYING OBJECTIVE		**Inference & Models**
INDICATOR	68-DA-04.	Refine computational models based on the data they have generated and/or data collected.

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		Variables
INDICATOR	68-AP-02.	Create clearly named variables that represent different data types.

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		Control
INDICATOR	68-AP-03.	Design and iteratively develop programs that combine control structures including nested loops and compound conditionals.
INDICATOR	68-AP-04.	Construct programs that include events.

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-11.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.

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.
CONTENT STANDARD		**Measurement and Data**
BENCHMARK		**Represent and interpret data.**
GRADE LEVEL EXPECTATION	5.MD.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.

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.

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	**5**	**Using mathematics and computational thinking**
GRADE LEVEL EXPECTATION		Using mathematics and computational thinking in K-12 builds logical reasoning and problem-solving skills.

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		**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	**5**	**Using mathematics and computational thinking**
GRADE LEVEL EXPECTATION		Using mathematics and computational thinking in K-12 builds logical reasoning and problem-solving skills.

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
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		**Physical Science (PS)**
BENCHMARK	**MS-PS3.**	**ENERGY**
GRADE LEVEL EXPECTATION	MS-PS3-1.	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and/or the speed of an object.
GRADE LEVEL EXPECTATION	MS-PS3-5.	Construct and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
CONTENT STANDARD		**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: **2012**

CONTENT STANDARD		**Library and Technology**
BENCHMARK		**Media and Technology Literacy**
GRADE LEVEL EXPECTATION		**Creative and Innovative Processes and Products**
INDICATOR	K-5.MTL.8.	Use models and simulations to investigate systems and issues.

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

CONTENT STANDARD		**Computer Science and Cybersecurity Standards**

BENCHMARK		**Information Literacy**
GRADE LEVEL EXPECTATION		**Create**
INDICATOR		**It is important to both consume and produce information to be digitally literate.**
INDICATOR	5.C.1.	Independently or collaboratively, create a digital product using two or more tools.

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.8.	Use models and simulations to investigate and explain systems and issues.

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.2.	Debug a program that includes sequencing, loops, or conditionals.

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 solve problems.**
INDICATOR	6.DD.1.	Use programs that utilize combinations of loops, conditionals, and the manipulation of variables representing different data types.

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.

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.

DOMAIN / ACADEMIC CONTENT STANDARD	OH.6.SP.	STATISTICS AND PROBABILITY
STANDARD / BENCHMARK		**Develop understanding of statistical problem solving.**
BENCHMARK / GRADE LEVEL INDICATOR	**6.SP.1.**	**Develop statistical reasoning by using the GAISE model:**
PROFICIENCY LEVEL	6.SP.1.b.	Collect Data: Design and use a plan to collect appropriate data to answer a statistical question. (GAISE Model, step 2)
PROFICIENCY LEVEL	6.SP.1.c.	Analyze Data: Select appropriate graphical methods and numerical measures to analyze data by displaying variability within a group, comparing individual to individual, and comparing individual to group. (GAISE Model, step 3)

Ohio Learning Standards

Science

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

DOMAIN / ACADEMIC CONTENT STANDARD		PHYSICAL SCIENCE (PS)

STANDARD / BENCHMARK		**Topic: Matter and Motion - This topic focuses on the study of foundational concepts of the particulate nature of matter, linear motion, and kinetic and potential energy.**
BENCHMARK / GRADE LEVEL INDICATOR	**6.PS.3:**	**There are two categories of energy: kinetic and potential.**
PROFICIENCY LEVEL		Objects and substances in motion have kinetic energy.

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.a.	Describe the advantages/disadvantages of technology (past, present, future) to understand the relationship between technology, society and the individual.
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.c.	Describe a process as a series of actions and how it is used to produce a result.

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.a.	Critique needs and opportunities for designing solutions.
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.
PROFICIENCY LEVEL	3-5.DT.2.c.	Generate, develop, and communicate design ideas and decisions using appropriate terms and graphical representations.

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.

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 4:**	**Evaluate designs using functional, aesthetic and creative elements.**
PROFICIENCY LEVEL	3-5.DT.4.a.	Use criteria developed with guidance to evaluate a new or improved product for its functional, aesthetic and creative elements.
PROFICIENCY LEVEL	3-5.DT.4.b.	Examine a familiar product or process and suggest improvements to its design.

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.
PROFICIENCY LEVEL	ATP.M.5.b.	With grade appropriate complexity, modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.

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 1:**	**Demonstrate an understanding of technology's impact on the advancement of humanity – economically, environmentally and ethically.**
PROFICIENCY LEVEL	6-8.ST.1.b.	Explore the advantages and disadvantages of widespread use, accessibility, and reliance on technology in your world.

PROFICIENCY LEVEL	6-8.ST.1.d.	Analyze an environmental concern and investigate technology solutions to that problem.

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.a.	Explore and document how technology can impact efficiency.

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.

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

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		**Representation & Reasoning**
PROFICIENCY LEVEL	AI.RR.6.a.	Illustrate how a computer can solve a maze, find a route on a map or reason about concepts in a knowledge graph by drawing a search tree.

DOMAIN / ACADEMIC CONTENT STANDARD		**Computer Science, Grade 6**
STANDARD / BENCHMARK		**ARTIFICIAL INTELLIGENCE**

BENCHMARK / GRADE LEVEL INDICATOR		**Machine Learning**
PROFICIENCY LEVEL	AI.ML.6.b.	Illustrate the structure of a neural network to describe how its parts form a set of functions that compute an output.

Oklahoma Academic Standards

Mathematics

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

CONTENT STANDARD / COURSE		**Mathematical Actions and Processes**
STRAND / STANDARD		Develop Accurate and Appropriate Procedural Fluency
STRAND / STANDARD		Develop Strategies for Problem Solving
STRAND / STANDARD		Develop Mathematical Reasoning
STRAND / STANDARD		Develop the Ability to Make Conjectures, Model, and Generalize
STRAND / STANDARD		Develop the Ability to Communicate Mathematically
CONTENT STANDARD / COURSE	**5**	**Fifth Grade (5)**
STRAND / STANDARD	**5.N.**	**Numbers & Operations (N)**
OBJECTIVE	**5.N.2.**	**Divide multi-digit numbers and solve real-world and mathematical problems using arithmetic.**
SKILL / CONCEPT	5.N.2.4.	Construct models to solve multi-digit whole number problems requiring addition, subtraction, multiplication, and division using various representations, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.

Oklahoma Academic Standards

Mathematics

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

CONTENT STANDARD / COURSE		**Mathematical Actions and Processes**
STRAND / STANDARD		Develop Accurate and Appropriate Procedural Fluency
STRAND / STANDARD		Develop Strategies for Problem Solving
STRAND / STANDARD		Develop Mathematical Reasoning

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

CONTENT STANDARD / COURSE	**6**	**Sixth Grade (6)**
STRAND / STANDARD	**6.N.**	**Numbers & Operations (N)**
OBJECTIVE	**6.N.1.**	**Read, write, and represent rational numbers expressed as integers, fractions, decimals, percents, and ratios; use these representations in real-world and mathematical situations.**
SKILL / CONCEPT	6.N.1.4.	Determine equivalencies among fractions, mixed numbers, decimals, and percents.

CONTENT STANDARD / COURSE	**6**	**Sixth Grade (6)**
STRAND / STANDARD	**6.N.**	**Numbers & Operations (N)**
OBJECTIVE	**6.N.3.**	**Explain and use the concept of ratio and its relationship to other rational numbers and to the multiplication and division of whole numbers. Use ratios to solve problems.**
SKILL / CONCEPT	6.N.3.3.	Apply the relationship between ratios, equivalent fractions, unit rates, and percents to solve problems in various contexts.

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	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.V.	Variables (V)
SKILL	5.AP.V.01.	Create programs that use variables to store and modify grade level appropriate data.

CONTENT STANDARD / COURSE		Oklahoma Academic Standards - Computer Science
STRAND / STANDARD	5	Fifth Grade (5)
OBJECTIVE	5.AP.	Algorithms & Programming (AP)
SKILL / CONCEPT	5.AP.C.	Control (C)
SKILL	5.AP.C.01.	Create programs using a programming language that utilize sequencing, repetition, conditionals, event handlers and variables using math operations to manipulate values to solve a problem or express ideas both independently and collaboratively.

CONTENT STANDARD / COURSE		Oklahoma Academic Standards - Computer Science
STRAND / STANDARD	5	Fifth Grade (5)
OBJECTIVE	5.AP.	Algorithms & Programming (AP)

SKILL / CONCEPT	**5.AP.M.**	**Modularity (M)**
SKILL	5.AP.M.02.	With grade appropriate complexity, modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.
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.03.	Analyze, create, and debug a program that includes sequencing, repetition, conditionals, and variables in a programming language.

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.
OBJECTIVE	ISTE-S.4.c.	Students develop, test and refine prototypes as part of a cyclical design process.
CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.6.**	**Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
OBJECTIVE	ISTE-S.6.c.	Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

CONTENT STANDARD / COURSE		ISTE for Students 2016 (ISTE-S)
STRAND / STANDARD	**ISTE-S.7.**	**Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
OBJECTIVE	ISTE-S.7.b.	Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
OBJECTIVE	ISTE-S.7.d.	Students explore local and global issues and use collaborative technologies to work with others to investigate 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	**6**	**Sixth Grade (6)**
OBJECTIVE	**6.CS.**	**Computing Systems (CS)**

SKILL / CONCEPT	**6.CS.HS.**	**Hardware & Software (HS)**
SKILL	6.CS.HS.01.	Model multiple methods of combining hardware and software to collect and exchange data.

CONTENT STANDARD / COURSE		**Oklahoma Academic Standards - Computer Science**
STRAND / STANDARD	**6**	**Sixth Grade (6)**
OBJECTIVE	**6.AP.**	**Algorithms & Programming (AP)**
SKILL / CONCEPT	**6.AP.C.**	**Control (C)**
SKILL	6.AP.C.01.	Develop programs that utilize combinations of repetition, conditionals, and the manipulation of variables representing different data types.

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.02.	Incorporate existing code, media, and libraries into original programs and give attribution.
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.

OBJECTIVE	ISTE-S.4.c.	Students develop, test and refine prototypes as part of a cyclical design process.
CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.6.**	**Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
OBJECTIVE	ISTE-S.6.c.	Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
CONTENT STANDARD / COURSE		**ISTE for Students 2016 (ISTE-S)**
STRAND / STANDARD	**ISTE-S.7.**	**Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
OBJECTIVE	ISTE-S.7.b.	Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
OBJECTIVE	ISTE-S.7.d.	Students explore local and global issues and use collaborative technologies to work with others to investigate 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.
STANDARD / CONTENT AREA		**Grade 5 Standards**

CONTENT STANDARD / PROFICIENCY	**5.DR.**	**Data Reasoning (5.DR)**
BENCHMARK / STRAND	**5.DR.A.**	**Pose investigative questions and collect/consider data.**
EXPECTATION / BENCHMARK	5.DR.A.1.	Generate questions to investigate situations within the classroom, school or community. Determine strategies for collecting or considering data involving operations with fractions for this grade that can naturally answer questions by using information presented in line plots.

STANDARD / CONTENT AREA		**Grade 5 Standards**
CONTENT STANDARD / PROFICIENCY	**5.DR.**	**Data Reasoning (5.DR)**
BENCHMARK / STRAND	**5.DR.B.**	**Analyze, represent, and interpret data.**
EXPECTATION / BENCHMARK	5.DR.B.2.	Analyze graphical representations and describe the distribution of the numerical data through line plots or categorical data through bar graphs. Interpret information presented to answer investigative questions.

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.

STANDARD / CONTENT AREA		**Grade 6 Standards**
CONTENT STANDARD / PROFICIENCY	**6.DR.**	**Data Reasoning (6.DR)**
BENCHMARK / STRAND	**6.DR.B.**	**Collect and Consider Data.**

EXPECTATION / BENCHMARK	6.DR.B.2.	Collect and record data with technology to identify and describe the characteristics of numerical data sets using quantitative measures of center and variability.

STANDARD / CONTENT AREA		**Grade 6 Standards**
CONTENT STANDARD / PROFICIENCY	**6.DR.**	**Data Reasoning (6.DR)**
BENCHMARK / STRAND	**6.DR.C.**	**Analyze, summarize, and describe data.**
EXPECTATION / BENCHMARK	6.DR.C.3.	Analyze data representations and describe measures of center and variability of quantitative data using appropriate displays.

Oregon Academic Content Standards

Science

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

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-PS3.**	**Energy**
CONTENT STANDARD / PROFICIENCY		**Students who demonstrate understanding can:**
BENCHMARK / STRAND	MS-PS3-5.	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

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.6-8.9.	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.
SUBJECT / STANDARD AREA	**PA.CC.2.4.5.**	**Measurement, Data, and Probability**
STANDARD AREA / STATEMENT	**CC.2.4.5.A.**	**Measurement and Data**

STANDARD	CC.2.4.5.A.4.	Solve problems involving computation of fractions using information provided in a line plot.

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.

SUBJECT / STANDARD AREA	PA.CC.2.1.6.	Numbers and Operations
STANDARD AREA / STATEMENT	**CC.2.1.6.E.**	**The Number System**
STANDARD	CC.2.1.6.E.2.	Identify and choose appropriate processes to compute fluently with multi-digit numbers.

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.8.	Use mathematics in all aspects of scientific inquiry.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.2.**	**Physical Sciences: Chemistry and Physics**
STANDARD	**3.2.B.**	**Physics**
DESCRIPTOR / STANDARD	3.2.5.B4a.	Demonstrate how electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.

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.

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.

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.8.	Use mathematics in all aspects of scientific inquiry.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.2.**	**Physical Sciences: Chemistry and Physics**
STANDARD	**3.2.B.**	**Physics**

DESCRIPTOR / STANDARD	3.2.6.B2b.	Differentiate between potential and kinetic energy.

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.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.

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.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.5.**	**Humans and the Environment**
STANDARD	4.5.6.A.	Examine how historical events have shaped the sustainable use of natural resources.

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.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-NI.**	**Networks & The Internet**
STANDARD		**Cybersecurity**
DESCRIPTOR / STANDARD	1B-NI-05.	Discuss real-world cybersecurity problems and how personal information can be protected. (P3.1)

SUBJECT / STANDARD AREA	**CSTA.1B.**	**Level 1B (Ages 8-11)**
STANDARD AREA / STATEMENT	**1B-AP.**	**Algorithms & Programming**
STANDARD		**Variables**
DESCRIPTOR / STANDARD	1B-AP-09.	Create programs that use variables to store and modify data. (P5.2)

SUBJECT / STANDARD AREA	**CSTA.1B.**	**Level 1B (Ages 8-11)**

STANDARD AREA / STATEMENT	**1B-AP.**	**Algorithms & Programming**
STANDARD		**Control**
DESCRIPTOR / STANDARD	1B-AP-10.	Create programs that include sequences, events, loops, and conditionals. (P5.2)

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)

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-DA.**	**Data & Analysis**
STANDARD		**Inference & Models**
DESCRIPTOR / STANDARD	2-DA-09.	Refine computational models based on the data they have generated. (P5.3, P4.4)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Variables**

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Control**

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

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-AP.**	**Algorithms & Programming**
STANDARD		**Program Development**

DESCRIPTOR / STANDARD	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P2.2)

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)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-IC.**	**Impacts of Computing**
STANDARD		**Safety, Law, & Ethics**

DESCRIPTOR / STANDARD	2-IC-23.	Describe tradeoffs between allowing information to be public and keeping information private and secure. (P7.2)