

Main Criteria: Forward Education

Secondary Criteria: Pennsylvania Core and Academic Standards, Rhode Island World-Class Standards, South Carolina Standards & Learning, South Dakota Content Standards, Tennessee Academic Standards, Texas Essential Knowledge and Skills (TEKS), Utah Core Standards, Vermont Content Standards, Virginia Standards of Learning, Washington State K-12 Learning Standards and Guidelines, Washington DC Academic Standards, West Virginia College and Career Readiness Standards, Wisconsin Academic Standards, Wyoming Content and Performance Standards

Subjects: Mathematics, Science, Technology Education

Grades: 5, 6, Key Stage 2

Forward Education

Smart Farming with Automated Watering

Pennsylvania Core and Academic Standards

Mathematics

Grade 5 - Adopted: 2014

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

Pennsylvania Core and Academic Standards

Mathematics

Grade 6 - Adopted: 2014

SUBJECT / STANDARD AREA	PA.CC.M P.	Standards for Mathematical Practice
STANDARD AREA / STATEMENT	CC.MP.1.	Make sense of problems and persevere in solving them.
STANDARD AREA / STATEMENT	CC.MP.2.	Reason abstractly and quantitatively.

STANDARD AREA / STATEMENT	CC.MP.3. Construct viable arguments and critique the reasoning of others.
STANDARD AREA / STATEMENT	CC.MP.4 Model with mathematics.
STANDARD AREA / STATEMENT	CC.MP.5 Use appropriate tools strategically.
STANDARD AREA / STATEMENT	CC.MP.7. Look for and make use of structure.

SUBJECT / STANDARD AREA	PA.CC.2.2.6.	Algebraic Concepts
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STANDARD AREA / STATEMENT	CC.2.2.6.B.	Expressions and Equations
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STANDARD	CC.2.2.6.B.2.	Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.
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**Pennsylvania Core and Academic Standards
Science
Grade 5 - Adopted: 2010**

SUBJECT / STANDARD AREA	PA.SI.	Science as Inquiry
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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.
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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.
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STANDARD AREA / STATEMENT	SI.9.	Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.
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SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
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STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
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STANDARD	3.4.A.	The Scope of Technology
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DESCRIPTOR / STANDARD	3.4.5.A1.	Explain how people use tools and techniques to help them do things.
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DESCRIPTOR / STANDARD 3.4.5.A2. Understand that a subsystem is a system that operates as part of a larger system.

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

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

DESCRIPTOR / STANDARD 3.4.5.B1. Explain how the use of technology can have unintended consequences.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.C.	Technology and Engineering Design

DESCRIPTOR / STANDARD 3.4.5.C1. Explain how the design process is a purposeful method of planning practical solutions to problems.

DESCRIPTOR / STANDARD 3.4.5.C2. Describe how design, as a dynamic process of steps, can be performed in different sequences and repeated.

DESCRIPTOR / STANDARD 3.4.5.C3. Identify how invention and innovation are creative ways to turn ideas into real things.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.D.	Abilities for a Technological World

DESCRIPTOR / STANDARD 3.4.5.D1. Identify ways to improve a design solution.

DESCRIPTOR / STANDARD 3.4.5.D3. Determine if the human use of a product or system creates positive or negative results.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.E.	The Designed World

DESCRIPTOR / STANDARD	3.4.5.E3.	Explain how tools, machines, products, and systems use energy in order to do work.
SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
STANDARD AREA / STATEMENT	4.4.	Agriculture and Society

STANDARD 4.4.5.C. Investigate the factors influencing plant and animal growth. (e.g., soil, water, nutrients, and light)

Pennsylvania Core and Academic Standards

Science

Grade 6 - Adopted: 2010

SUBJECT / STANDARD AREA	PA.SI.	Science as Inquiry
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STANDARD AREA / STATEMENT SI.5. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.

STANDARD AREA / STATEMENT SI.6. Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.

STANDARD AREA / STATEMENT SI.9. Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
STANDARD	3.4.A.	The Scope of Technology

DESCRIPTOR / STANDARD 3.4.6.A1. Identify how creative thinking and economic and cultural influences shape technological development.

DESCRIPTOR / STANDARD 3.4.6.A2. Describe how systems thinking involves considering how every part relates to others.

DESCRIPTOR / STANDARD 3.4.6.A3. Explain how knowledge from other fields of study (STEM) integrate to create new technologies.

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

STANDARD	3.4.B.	Technology and Society
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DESCRIPTOR / STANDARD 3.4.6.B2. Describe how technologies can be used to repair damage caused by natural disasters and to break down waste from the use of various products and systems.

DESCRIPTOR / STANDARD 3.4.6.B4. Demonstrate how new technologies are developed based on people's needs, wants, values, and/or interests.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
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STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
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STANDARD	3.4.C.	Technology and Engineering Design
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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
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STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
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STANDARD	3.4.D.	Abilities for a Technological World
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DESCRIPTOR / STANDARD 3.4.6.D1. Apply a design process to solve problems beyond the laboratory classroom.

DESCRIPTOR / STANDARD 3.4.6.D2. Use computers appropriately to access and organize and apply information.

SUBJECT / STANDARD AREA	PA.3.	Science and Technology and Engineering Education
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STANDARD AREA / STATEMENT	3.4.	Technology and Engineering Education
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STANDARD	3.4.E.	The Designed World
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DESCRIPTOR / STANDARD 3.4.6.E2. Identify how emerging agricultural technologies have an effect on ecosystem dynamics and human/animal food resources.

SUBJECT / STANDARD AREA	PA.4.	Environment and Ecology
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STANDARD AREA / STATEMENT	4.4.	Agriculture and Society
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STANDARD 4.4.6.A. Explain how different plants and animals in the United States have specific growing requirements related to climate and soil conditions.

STANDARD	4.4.6.B.	Analyze how soil types and geographic regions have impacted agriculture in Pennsylvania.
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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.
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STANDARD	CC.3.5.6-8.C.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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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.
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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.
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SUBJECT / STANDARD AREA	PA.CC.3.5.6-8.	Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.
STANDARD AREA / STATEMENT		Integration of Knowledge and Ideas

STANDARD	CC.3.5.6-8.G.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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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.
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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.
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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	CST A.1B.	Level 1B (Ages 8-11)
STANDARD AREA / STATEMENT	1B-AP.	Algorithms & Programming
STANDARD		Program Development

DESCRIPTOR / STANDARD 1B-AP-13. Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. (P1.1, P5.1)

DESCRIPTOR / STANDARD 1B-AP-16. Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)

DESCRIPTOR / STANDARD 1B-AP-17. Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

SUBJECT / STANDARD AREA	CST A.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	CST A.2.	Level 2 (Ages 11-14)
STANDARD AREA / STATEMENT	2-AP.	Algorithms & Programming
STANDARD		Algorithms

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

SUBJECT / STANDARD AREA	CST A.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	CST A.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)

Rhode Island World-Class Standards

Mathematics

Grade 5 - Adopted: 2021

DOMAIN		The Standards for Mathematical Practice
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STATEMENT OF ENDURING KNOWLEDGE MP1 Make sense of problems and persevere in solving them.

STATEMENT OF ENDURING KNOWLEDGE MP2 Reason abstractly and quantitatively.

STATEMENT OF ENDURING KNOWLEDGE MP3 Construct viable arguments and critique the reasoning of others.

STATEMENT OF ENDURING KNOWLEDGE	MP4	Model with mathematics.
STATEMENT OF ENDURING KNOWLEDGE	MP5	Use appropriate tools strategically.
STATEMENT OF ENDURING KNOWLEDGE	MP7	Look for and make use of structure.

**Rhode Island World-Class Standards
Mathematics
Grade 6 - Adopted: 2021**

DOMAIN		The Standards for Mathematical Practice
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STATEMENT OF ENDURING KNOWLEDGE	MP1	Make sense of problems and persevere in solving them.
STATEMENT OF ENDURING KNOWLEDGE	MP2	Reason abstractly and quantitatively.
STATEMENT OF ENDURING KNOWLEDGE	MP3	Construct viable arguments and critique the reasoning of others.
STATEMENT OF ENDURING KNOWLEDGE	MP4	Model with mathematics.
STATEMENT OF ENDURING KNOWLEDGE	MP5	Use appropriate tools strategically.
STATEMENT OF ENDURING KNOWLEDGE	MP7	Look for and make use of structure.

DOMAIN		Grade 6 Content Standards
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STATEMENT OF ENDURING KNOWLEDGE	6.RP.	Ratios and Proportional Relationships
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GSE STEM	6.RP.A.	Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.
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SPECIFIC INDICATOR	6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
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INDICATOR	6.RP.A.3. a.	Make tables of equivalent ratios relating quantities with whole-number measurements. Find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
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DOMAIN		Grade 6 Content Standards
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STATEMENT OF ENDURING KNOWLEDGE	6.EE.	Expressions and Equations
GSE STEM	6.EE.B.	Reason about and solve one-variable equations and inequalities.

SPECIFIC INDICATOR 6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

**Rhode Island World-Class Standards
Science
Grade 5 - Adopted: 2013**

DOMAIN	NGSS.5-LS.	LIFE SCIENCE
STATEMENT OF ENDURING KNOWLEDGE	5-LS1.	From Molecules to Organisms: Structures and Processes
GSE STEM		Students who demonstrate understanding can:

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

DOMAIN	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
STATEMENT OF ENDURING KNOWLEDGE	5-ESS3.	Earth and Human Activity
GSE STEM		Students who demonstrate understanding can:

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

DOMAIN	NGSS.3-5-ETS.	ENGINEERING DESIGN
STATEMENT OF ENDURING KNOWLEDGE	3-5-ETS1.	Engineering Design
GSE STEM		Students who demonstrate understanding can:

SPECIFIC 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.

SPECIFIC 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.

SPECIFIC 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.

**Rhode Island World-Class Standards
Science
Grade 6 - Adopted: 2013**

DOMAIN	NGSS.MS-LS.	LIFE SCIENCE
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STATEMENT OF ENDURING KNOWLEDGE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
GSE STEM		Students who demonstrate understanding can:

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

DOMAIN	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
STATEMENT OF ENDURING KNOWLEDGE	MS-ESS3.	Earth and Human Activity
GSE STEM		Students who demonstrate understanding can:

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

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

DOMAIN	NGSS.MS-ETS.	ENGINEERING DESIGN
STATEMENT OF ENDURING KNOWLEDGE	MS-ETS1.	Engineering Design
GSE STEM		Students who demonstrate understanding can:

SPECIFIC 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.

SPECIFIC 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.

SPECIFIC 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.

Grade 6 - Adopted: 2010

DOMAIN	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Key Ideas and Details

GSE STEM 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.

GSE STEM RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

DOMAIN	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Craft and Structure

GSE STEM	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.
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GSE STEM	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.
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DOMAIN	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Integration of Knowledge and Ideas

GSE STEM	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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GSE STEM	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.
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DOMAIN	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Range of Reading and Level of Text Complexity

GSE STEM	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.
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DOMAIN	WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Text Types and Purposes
GSE STEM	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

SPECIFIC INDICATOR	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
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DOMAIN	WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
STATEMENT OF ENDURING KNOWLEDGE		Production and Distribution of Writing

GSE STEM	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
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GSE STEM	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.
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**Rhode Island World-Class Standards
Technology Education
Grade 5 - Adopted: 2016**

DOMAIN		ISTE Standards for Students
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STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.3.	Knowledge Constructors: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
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GSE STEM	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
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DOMAIN		ISTE Standards for Students
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STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.4.	Innovative Designers: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
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GSE STEM	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
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GSE STEM	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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DOMAIN		ISTE Standards for Students
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STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.5.	Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
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GSE STEM	ISTE-S.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.
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GSE STEM	ISTE-S.5.b.	Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
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GSE STEM	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
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**Rhode Island World-Class Standards
Technology Education
Grade 6 - Adopted: 2016**

DOMAIN		ISTE Standards for Students
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STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.3.	Knowledge Constructors: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
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GSE STEM	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
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DOMAIN		ISTE Standards for Students
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STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.4.	Innovative Designers: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
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GSE STEM	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
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GSE STEM	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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DOMAIN		ISTE Standards for Students
STATEMENT OF ENDURING KNOWLEDGE	RI.ISTE-S.5.	Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

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

Grade 6 - Adopted: 2018

DOMAIN		Computer Science
STATEMENT OF ENDURING KNOWLEDGE	2-CT.	Computational Thinking & Programming
GSE STEM	2-CT-A.	Algorithms

SPECIFIC INDICATOR 2-CT-A-1. Use diagrams and/or pseudocode to plan, analyze, solve and/or code complex problems as algorithms.

South Carolina Standards & Learning
Mathematics

Grade 5 - Adopted: 2015

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.1.	Make sense of problems and persevere in solving them.

PERFORMANCE DESCRIPTOR / STANDARD PS.1b. Recognize there may be multiple entry points to a problem and more than one path to a solution.

PERFORMANCE DESCRIPTOR / STANDARD PS.1c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem.

PERFORMANCE DESCRIPTOR / STANDARD PS.1d. Evaluate the success of an approach to solve a problem and refine it if necessary.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.2.	Reason both contextually and abstractly.

PERFORMANCE DESCRIPTOR / STANDARD PS.2d. Connect the meaning of mathematical operations to the context of a given situation.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.3.	Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.

PERFORMANCE DESCRIPTOR / STANDARD PS.3a. Construct and justify a solution to a problem.

PERFORMANCE DESCRIPTOR / STANDARD PS.3b. Compare and discuss the validity of various reasoning strategies.

PERFORMANCE DESCRIPTOR / STANDARD PS.3d. Reflect on and provide thoughtful responses to the reasoning of others.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.4.	Connect mathematical ideas and real-world situations through modeling.

PERFORMANCE DESCRIPTOR / STANDARD PS.4a. Identify relevant quantities and develop a model to describe their relationships.

PERFORMANCE DESCRIPTOR / STANDARD PS.4b. Interpret mathematical models in the context of the situation.

PERFORMANCE DESCRIPTOR / STANDARD PS.4d. Evaluate the reasonableness of a model and refine if necessary.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.5.	Use a variety of mathematical tools effectively and strategically.

PERFORMANCE DESCRIPTOR / STANDARD PS.5a. Select and use appropriate tools when solving a mathematical problem.

PERFORMANCE DESCRIPTOR / STANDARD PS.5b. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.7.	Identify and utilize structure and patterns.
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PERFORMANCE DESCRIPTOR / STANDARD PS.7a. Recognize complex mathematical objects as being composed of more than one simple object.

PERFORMANCE DESCRIPTOR / STANDARD PS.7c. Look for structures to interpret meaning and develop solution strategies.

**South Carolina Standards & Learning
Mathematics
Grade 6 - Adopted: 2015**

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.1.	Make sense of problems and persevere in solving them.
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PERFORMANCE DESCRIPTOR / STANDARD PS.1b. Recognize there may be multiple entry points to a problem and more than one path to a solution.

PERFORMANCE DESCRIPTOR / STANDARD PS.1c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem.

PERFORMANCE DESCRIPTOR / STANDARD PS.1d. Evaluate the success of an approach to solve a problem and refine it if necessary.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.2.	Reason both contextually and abstractly.
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PERFORMANCE DESCRIPTOR / STANDARD PS.2d. Connect the meaning of mathematical operations to the context of a given situation.

STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.3.	Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.
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PERFORMANCE DESCRIPTOR / STANDARD PS.3a. Construct and justify a solution to a problem.

PERFORMANCE DESCRIPTOR / STANDARD	PS.3b.	Compare and discuss the validity of various reasoning strategies.
PERFORMANCE DESCRIPTOR / STANDARD	PS.3d.	Reflect on and provide thoughtful responses to the reasoning of others.
STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.4.	Connect mathematical ideas and real-world situations through modeling.
PERFORMANCE DESCRIPTOR / STANDARD	PS.4a.	Identify relevant quantities and develop a model to describe their relationships.
PERFORMANCE DESCRIPTOR / STANDARD	PS.4b.	Interpret mathematical models in the context of the situation.
PERFORMANCE DESCRIPTOR / STANDARD	PS.4d.	Evaluate the reasonableness of a model and refine if necessary.
STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.5.	Use a variety of mathematical tools effectively and strategically.
PERFORMANCE DESCRIPTOR / STANDARD	PS.5a.	Select and use appropriate tools when solving a mathematical problem.
PERFORMANCE DESCRIPTOR / STANDARD	PS.5b.	Use technological tools and other external mathematical resources to explore and deepen understanding of concepts.
STANDARD / COURSE	SC.PS.	South Carolina College- and Career-Ready Mathematical Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	PS.7.	Identify and utilize structure and patterns.
PERFORMANCE DESCRIPTOR / STANDARD	PS.7a.	Recognize complex mathematical objects as being composed of more than one simple object.
PERFORMANCE DESCRIPTOR / STANDARD	PS.7c.	Look for structures to interpret meaning and develop solution strategies.

STANDARD / COURSE	SC.6.NS.	The Number System
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	6.NS.7.	Understand and apply the concepts of comparing, ordering, and finding absolute value to rational numbers.

PERFORMANCE DESCRIPTOR / STANDARD 6.NS.7c. Use concepts of equality and inequality to write and to explain real-world and mathematical situations.

STANDARD / COURSE	SC.6.RP.	Ratios and Proportional Relationships
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	6.RP.3.	Apply the concepts of ratios and rates to solve real-world and mathematical problems.

PERFORMANCE DESCRIPTOR / STANDARD 6.RP.3a. Create a table consisting of equivalent ratios and plot the results on the coordinate plane.

PERFORMANCE DESCRIPTOR / STANDARD 6.RP.3b. Use multiple representations, including tape diagrams, tables, double number lines, and equations, to find missing values of equivalent ratios.

PERFORMANCE DESCRIPTOR / STANDARD 6.RP.3c. Use two tables to compare related ratios.

**South Carolina Standards & Learning
Science
Grade 5 - Adopted: 2021**

STANDARD / COURSE		Earth and Space Science (ESS)
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		Earth and Human Activity (ESS3)

PERFORMANCE DESCRIPTOR / STANDARD 5-ESS3-1. Evaluate potential solutions to problems that individual communities face in protecting the Earth's resources and environment.

**South Carolina Standards & Learning
Technology Education
Grade 5 - Adopted: 2017**

STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANCE DESCRIPTOR / STANDARD	3	Recognize, define, and analyze computational problems.

GRADE LEVEL EXAMPLE / STAGE	3.a.	Recognize when it is appropriate to solve a problem computationally.
GRADE LEVEL EXAMPLE / STAGE	3.b.	Make sense of computational problems and persevere in solving them.
GRADE LEVEL EXAMPLE / STAGE	3.c.	Relate computational problems to prior knowledge.
GRADE LEVEL EXAMPLE / STAGE	3.d.	Recognize that there may be multiple approaches to solving a problem.
GRADE LEVEL EXAMPLE / STAGE	3.e.	Approach problem solving iteratively, using a cyclical process.

STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANC E DESCRIPTOR / STANDARD	4	Create, test, and refine computational artifacts.

GRADE LEVEL EXAMPLE / STAGE	4.b.	Recognize when to use the same solution for multiple problems.
GRADE LEVEL EXAMPLE / STAGE	4.c.	Test computational artifacts systematically by considering multiple scenarios and using test cases.

STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANC E DESCRIPTOR / STANDARD	5	Communicate about computing.

GRADE LEVEL EXAMPLE / STAGE	5.a.	Select and use appropriate technological tools to convey solutions to computing problems.
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STANDARD / COURSE		Algorithms and Programming
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 1.	Recognize that many daily tasks can be described as step-by-step instructions (i.e., algorithms).
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PERFORMANCE DESCRIPTOR / STANDARD 5.AP.1.1. Execute a sequence of instructions (i.e., algorithm) that mimic a daily task.

STANDARD / COURSE	Algorithms and Programming	
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 3.	Explore how tasks can be decomposed into simple tasks and simple tasks can be composed to form complex tasks.
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PERFORMANCE DESCRIPTOR / STANDARD 5.AP.3.1. Compose multiple levels of simple tasks (e.g., eating breakfast can include going to the table, sitting down in a chair, and picking up a spoon; brushing your teeth; walking to the bus stop) to make a more complex task.

STANDARD / COURSE	Algorithms and Programming	
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 4.	Develop a program to express an idea or address a problem.
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PERFORMANCE DESCRIPTOR / STANDARD 5.AP.4.1. Use a visual language to design and test a program that solves a simple task (e.g., online coding activity).

**South Carolina Standards & Learning
Technology Education
Grade 6 - Adopted: 2017**

STANDARD / COURSE	Process Standards	
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KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	A computer science literate student can:	
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PERFORMANCE DESCRIPTOR / STANDARD	3	Recognize, define, and analyze computational problems.
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GRADE LEVEL EXAMPLE / STAGE 3.a. Recognize when it is appropriate to solve a problem computationally.

GRADE LEVEL EXAMPLE / STAGE 3.b. Make sense of computational problems and persevere in solving them.

GRADE LEVEL EXAMPLE / STAGE 3.c. Relate computational problems to prior knowledge.

GRADE LEVEL EXAMPLE / STAGE	3.d.	Recognize that there may be multiple approaches to solving a problem.
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GRADE LEVEL EXAMPLE / STAGE	3.e.	Approach problem solving iteratively, using a cyclical process.
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STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANC E DESCRIPTOR / STANDARD	4	Create, test, and refine computational artifacts.

GRADE LEVEL EXAMPLE / STAGE	4.b.	Recognize when to use the same solution for multiple problems.
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GRADE LEVEL EXAMPLE / STAGE	4.c.	Test computational artifacts systematically by considering multiple scenarios and using test cases.
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STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANC E DESCRIPTOR / STANDARD	5	Communicate about computing.

GRADE LEVEL EXAMPLE / STAGE	5.a.	Select and use appropriate technological tools to convey solutions to computing problems.
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STANDARD / COURSE		Algorithms and Programming
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standar d 1.	Design, evaluate, and modify simple algorithms (e.g., steps to make a sandwich; steps to a popular dance; steps for sending an email).

PERFORMANC E DESCRIPTOR / STANDARD	6.AP.1.1.	Recognize that there are multiple ways to sequence instructions that can lead to the same result.
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STANDARD / COURSE		Algorithms and Programming
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standar d 4.	Design and code programs to solve problems.

PERFORMANCE DESCRIPTOR / STANDARD 6.AP.4.1. Use a beginner coding language (e.g., drag-and-drop, block-based) to design and code a simple program that solves a problem.

**South Dakota Content Standards
Mathematics
Grade 5 - Adopted: 2018**

GOAL/STRAND		Standards for Mathematical Practice
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INDICATOR/BENCHMARK	1	Make sense of problems and persevere in solving them.
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INDICATOR/BENCHMARK	2	Reason abstractly and quantitatively.
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INDICATOR/BENCHMARK	3	Construct viable arguments and critique the reasoning of others.
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INDICATOR/BENCHMARK	4	Model with mathematics.
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INDICATOR/BENCHMARK	5	Use appropriate tools strategically.
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INDICATOR/BENCHMARK	7	Look for and make use of structure.
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**South Dakota Content Standards
Mathematics
Grade 6 - Adopted: 2018**

GOAL/STRAND		Standards for Mathematical Practice
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INDICATOR/BENCHMARK	1	Make sense of problems and persevere in solving them.
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INDICATOR/BENCHMARK	2	Reason abstractly and quantitatively.
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INDICATOR/BENCHMARK	3	Construct viable arguments and critique the reasoning of others.
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INDICATOR/BENCHMARK	4	Model with mathematics.
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INDICATOR/BENCHMARK	5	Use appropriate tools strategically.
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INDICATOR/BENCHMARK	7	Look for and make use of structure.
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GOAL/STRAND	6.RP.	Ratios and Proportional Relationships
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INDICATOR/BE NCHMARK	6.RP.A.	Understand ratio concepts and use ratio reasoning to solve problems.
STANDARD	6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

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

GOAL/STRAND	6.EE.	Expressions and Equations
INDICATOR/BE NCHMARK	6.EE.B.	Reason about and solve one-variable equations and inequalities.

STANDARD 6.EE.B.5. Understand solving an equation or inequality is a process in which you determine values from a set that make an equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

South Dakota Content Standards

Science

Grade 5 - Adopted: 2015

GOAL/STRAND	SD.5.LSS	Fifth Grade Life Science Standards
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INDICATOR/BE NCHMARK 5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. (SEP: 7; DCI: LS1.C; CCC: Energy/Matter)

GOAL/STRAND	SD.5.SSS	Fifth Grade Space Science Standards
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INDICATOR/BE NCHMARK 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (SEP:8; DCI: ESS3.C; CCC: Systems)

South Dakota Content Standards

Science

Grade 6 - Adopted: 2015

GOAL/STRAND	SD.6-8.PSS.	Middle School Physical Science Standards
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INDICATOR/BE NCHMARK MS-PS4-3. Obtain, evaluate and communicate information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. (SEP: 8; DCI: PS4.C; CCC: Structure, Technology)

GOAL/STRAND	SD.6-8.LSS.	Middle School Life Science Standards
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INDICATOR/BE NCHMARK MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (SEP: 7; DCI: LS2.C, LS4.D, ETS1.B ; CCC: Stability/Change, Technology)

GOAL/STRAND	SD.6-8.ESS.	Middle School Earth and Space Science Standards
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INDICATOR/BE NCHMARK MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (SEP: 6 ; DCI: ESS3.C; CCC: Cause/Effect, Technology)

INDICATOR/BE NCHMARK 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. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Technology, Nature Science/Consequence-Actions)

GOAL/STRAND	SD.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
INDICATOR/BENCHMARK		Key Ideas and Details

STANDARD	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.
STANDARD	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

GOAL/STRAND	SD.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
INDICATOR/BENCHMARK		Craft and Structure

STANDARD	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.
STANDARD	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.

GOAL/STRAND	SD.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
INDICATOR/BENCHMARK		Integration of Knowledge and Ideas

STANDARD	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
STANDARD	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.

GOAL/STRAND	SD.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
INDICATOR/BENCHMARK		Range of Reading and Level of Text Complexity

STANDARD	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.
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GOAL/STRAND	SD.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
INDICATOR/BENCHMARK		Text Types and Purposes
STANDARD	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

SUPPORTING SKILLS	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
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GOAL/STRAND	SD.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
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INDICATOR/B ENCHMARK	Production and Distribution of Writing	
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STANDARD	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
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STANDARD	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
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**Tennessee Academic Standards
Mathematics
Grade 5 - Adopted: 2021**

STRAND / STANDARD / COURSE	Standards for Mathematical Practice	
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CONCEPTUAL STRAND / GUIDING QUESTION	1	Make sense of problems and persevere in solving them.
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CONCEPTUAL STRAND / GUIDING QUESTION	2	Reason abstractly and quantitatively.
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CONCEPTUAL STRAND / GUIDING QUESTION	3	Construct viable arguments and critique the reasoning of others.
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CONCEPTUAL STRAND / GUIDING QUESTION	4	Model with mathematics.
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CONCEPTUAL STRAND / GUIDING QUESTION	5	Use appropriate tools strategically.
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CONCEPTUAL STRAND / GUIDING QUESTION	7	Look for and make use of structure.
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**Tennessee Academic Standards
Mathematics
Grade 6 - Adopted: 2021**

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

STRAND / STANDARD / COURSE		Mathematics Grade 6
CONCEPTUAL STRAND / GUIDING QUESTION	6.RP.	Ratios and Proportional Relationships (RP)
GUIDING QUESTION / LEARNING EXPECTATION	6.RP.A.	Understand ratio concepts and use ratio reasoning to solve problems.
LEARNING EXPECTATION	6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).

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

STRAND / STANDARD / COURSE		Mathematics Grade 6
CONCEPTUAL STRAND / GUIDING QUESTION	6.EE.	Expressions and Equations (EE)
GUIDING QUESTION / LEARNING EXPECTATION	6.EE.B.	Reason about and solve one-variable equations and inequalities.

LEARNING EXPECTATION 6.EE.B.5. Understand that a solution to an equation or inequality is the value(s) that makes that statement true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

STRAND / STANDARD / COURSE	TN.5.ETS	Engineering, Technology, and Applications of Science (ETS)
CONCEPTUAL STRAND / GUIDING QUESTION	5.ETS1.	Engineering Design

GUIDING QUESTION / LEARNING EXPECTATION	5.ETS1.1.	Research, test, re-test, and communicate a design to solve a problem.
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GUIDING QUESTION / LEARNING EXPECTATION	5.ETS1.2.	Plan and carry out tests on one or more elements of a prototype in which variables are controlled and failure points are considered to identify which elements need to be improved. Apply the results of tests to redesign the prototype.
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GUIDING QUESTION / LEARNING EXPECTATION	5.ETS1.3.	Describe how failure provides valuable information toward finding a solution.
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STRAND / STANDARD / COURSE	TN.5.ETS	Engineering, Technology, and Applications of Science (ETS)
CONCEPTUAL STRAND / GUIDING QUESTION	5.ETS2.	Links Among Engineering, Technology, Science, and Society

GUIDING QUESTION / LEARNING EXPECTATION	5.ETS2.1.	Use appropriate measuring tools, simple hand tools, and fasteners to construct a prototype of a new or improved technology.
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GUIDING QUESTION / LEARNING EXPECTATION	5.ETS2.3.	Identify how scientific discoveries lead to new and improved technologies.
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**Tennessee Academic Standards
Science
Grade 6 - Adopted: 2016**

STRAND / STANDARD / COURSE	TN.6.LS.	Life Sciences (LS)
CONCEPTUAL STRAND / GUIDING QUESTION	6.LS4.	Biological Change: Unity and Diversity

GUIDING QUESTION / LEARNING EXPECTATION	6.LS4.2.	Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.
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STRAND / STANDARD / COURSE	TN.6.ESS	Earth and Space Sciences (ESS)
CONCEPTUAL STRAND / GUIDING QUESTION	6.ESS2.	Earth's Systems

GUIDING QUESTION / LEARNING EXPECTATION

6.ESS2.4 Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.

STRAND / STANDARD / COURSE	TN.6.ESS	Earth and Space Sciences (ESS)
CONCEPTUAL STRAND / GUIDING QUESTION	6.ESS3.	Earth and Human Activity

GUIDING QUESTION / LEARNING EXPECTATION

6.ESS3.3 Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

STRAND / STANDARD / COURSE	TN.6.ETS	Engineering, Technology, and Applications of Science (ETS)
CONCEPTUAL STRAND / GUIDING QUESTION	6.ETS1.	Engineering Design

GUIDING QUESTION / LEARNING EXPECTATION

6.ETS1.1. Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.

**Tennessee Academic Standards
Technology Education
Grade 5 - Adopted: 2022**

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Fifth Grade: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	5.AT.	Algorithmic Thinking

LEARNING EXPECTATION

5.AT.1. Analyze and improve an algorithm that includes sequencing and simple patterns with or without a computing device.

LEARNING EXPECTATION

5.AT.2. Create an algorithm to solve a problem while detecting and debugging logical errors within the algorithm.

LEARNING EXPECTATION 5.AT.3. Develop and recommend solutions to a given problem and explain the process to an audience.

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Fifth Grade: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	5.PC.	Programming Concepts

LEARNING EXPECTATION 5.PC.1. Create simple animated stories or solve pre-existing problems using a precise sequence of instructions and simple loops, collaboratively or individually.

**Tennessee Academic Standards
Technology Education
Grade 6 - Adopted: 2022**

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Middle School: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	MS.AT.	Algorithmic Thinking

LEARNING EXPECTATION MS.AT.1. Use clearly named variables of various data types to create generalized algorithms.

LEARNING EXPECTATION MS.AT.2. Create algorithms which include methods of controlling the flow of computation using “if...then... else” type conditional statements to perform different operations depending on the values of inputs.

LEARNING EXPECTATION MS.AT.3. Identify algorithms that make use of sequencing, selection, or iteration.

LEARNING EXPECTATION MS.AT.4. Describe how algorithmic processes and automation increase efficiency.

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Middle School: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	MS.PC.	Programming Concepts

LEARNING EXPECTATION MS.PC.1. Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

Texas Essential Knowledge and Skills (TEKS)
Mathematics
Grade 5 - Adopted: 2012

TEKS	111.7.	Grade 5, Adopted 2012.
STUDENT EXPECTATION	111.7.b.1.	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
GRADE LEVEL EXPECTATION	111.7.b.1. B.	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
GRADE LEVEL EXPECTATION	111.7.b.1. C.	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
GRADE LEVEL EXPECTATION	111.7.b.1. F.	Analyze mathematical relationships to connect and communicate mathematical ideas.

TEKS	111.7.	Grade 5, Adopted 2012.
STUDENT EXPECTATION	111.7.b.9.	Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to:
GRADE LEVEL EXPECTATION	111.7.b.9. C.	Solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.

Texas Essential Knowledge and Skills (TEKS)
Mathematics
Grade 6 - Adopted: 2012

TEKS	111.26.	Grade 6, Adopted 2012.
STUDENT EXPECTATION	111.26.b.1.	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
GRADE LEVEL EXPECTATION	111.26.b.1.B.	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
GRADE LEVEL EXPECTATION	111.26.b.1.C.	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
GRADE LEVEL EXPECTATION	111.26.b.1.F.	Analyze mathematical relationships to connect and communicate mathematical ideas.

TEKS	111.26.	Grade 6, Adopted 2012.
STUDENT EXPECTATION	111.26.b.7.	Expressions, equations, and relationships. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:
GRADE LEVEL EXPECTATION	111.26.b.7.B.	Distinguish between expressions and equations verbally, numerically, and algebraically.

Texas Essential Knowledge and Skills (TEKS)
Science

TEKS	§112.16	Science, Grade 5, Adopted 2017 – The provisions of §§112.11-112.16 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.16.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.16.b.2	Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations. The student is expected to:

INDICATOR §112.16.b .2.B ask well defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology

INDICATOR §112.16.b .2.C collect and record information using detailed observations and accurate measuring

INDICATOR §112.16.b .2.D analyze and interpret information to construct reasonable explanations from direct (observable). and indirect (inferred). evidence

INDICATOR §112.16.b .2.G construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information

TEKS	§112.16	Science, Grade 5, Adopted 2017 – The provisions of §§112.11-112.16 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.16.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.16.b.3	Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

INDICATOR §112.16.b .3.A analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing

INDICATOR §112.16.b .3.B draw or develop a model that represents how something that cannot be seen such as the Sun, Earth, and Moon system and formation of sedimentary rock works or looks

TEKS	§112.16	Science, Grade 5, Adopted 2017 – The provisions of §§112.11-112.16 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.16.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.16.b.4	Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

INDICATOR §112.16.b .4.A collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices; and materials to support observations of habitats or organisms such as terrariums and aquariums

Texas Essential Knowledge and Skills (TEKS)

Science

TEKS	§112.18	Science, Grade 6, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.18.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.18.b.2	Scientific investigation and reasoning. The student uses scientific practices during laboratory and field investigations. The student is expected to:

INDICATOR	§112.18.b .2.C	collect and record data using the International System of Units (SI), and qualitative means such as labeled drawings, writing, and graphic organizers
INDICATOR	§112.18.b .2.D	construct tables and graphs, using repeated trials and means, to organize data and identify patterns
INDICATOR	§112.18.b .2.E	analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends

TEKS	§112.18	Science, Grade 6, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.18.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.18.b.3	Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:

INDICATOR	§112.18.b .3.A	analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
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TEKS	§112.18	Science, Grade 6, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.
STUDENT EXPECTATION	§112.18.b	Knowledge and skills.
GRADE LEVEL EXPECTATION	§112.18.b.4	Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:

INDICATOR	§112.18.b .4.A	use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information
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Texas Essential Knowledge and Skills (TEKS)
Technology Education
Grade 5 - Adopted: 2011

TEKS	§126.7.	Technology Applications, Grades 3-5
STUDENT EXPECTATION	§126.7.(1)	Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge and develop digital products. The student is expected to:

GRADE LEVEL EXPECTATION	§126.7. (1)(C)	Use virtual environments to explore systems and issues.
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TEKS	§126.7.	Technology Applications, Grades 3-5
STUDENT EXPECTATION	§126.7.(4)	Critical thinking, problem solving, and decision making. The student researches and evaluates projects using digital tools and resources. The student is expected to:

GRADE LEVEL EXPECTATION	§126.7. (4)(A)	Identify information regarding a problem and explain the steps toward the solution.
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Texas Essential Knowledge and Skills (TEKS)
Technology Education
Grade 6 - Adopted: 2011

TEKS	§126.14.	Technology Applications, Grade 6
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STUDENT EXPECTATION	§126.14 .(4)	Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:
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GRADE LEVEL EXPECTATION §126.14.(4)(A) Identify and define relevant problems and significant questions for investigation.

**Utah Core Standards
Mathematics
Grade 5 - Adopted: 2016**

STANDARD / AREA OF LEARNING	UT .5.MP.	MATHEMATICAL PRACTICES (5.MP)
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OBJECTIVE / STRAND	5.MP.1.	Make sense of problems and persevere in solving them.
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OBJECTIVE / STRAND	5.MP.2.	Reason abstractly and quantitatively.
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OBJECTIVE / STRAND	5.MP.3.	Construct viable arguments and critique the reasoning of others.
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OBJECTIVE / STRAND	5.MP.4.	Model with mathematics.
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OBJECTIVE / STRAND	5.MP.5.	Use appropriate tools strategically.
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OBJECTIVE / STRAND	5.MP.7.	Look for and make use of structure.
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**Utah Core Standards
Mathematics
Grade 6 - Adopted: 2016**

STANDARD / AREA OF LEARNING	UT .6.MP.	MATHEMATICAL PRACTICES (6.MP)
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OBJECTIVE / STRAND	6.MP.1.	Make sense of problems and persevere in solving them.
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OBJECTIVE / STRAND	6.MP.2.	Reason abstractly and quantitatively.
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OBJECTIVE / STRAND	6.MP.3.	Construct viable arguments and critique the reasoning of others.
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OBJECTIVE / STRAND	6.MP.4.	Model with mathematics.
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OBJECTIVE / STRAND	6.MP.5.	Use appropriate tools strategically.
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OBJECTIVE / STRAND 6.MP.7. Look for and make use of structure.

STANDARD / AREA OF LEARNING	UT.6.RP.	RATIOS AND PROPORTIONAL RELATIONSHIPS (6.RP)
OBJECTIVE / STRAND		Understand ratio concepts and use ratio reasoning to solve problems (Standards 6.RP.1–3).
INDICATOR / CLUSTER	6.RP.3.	Use ratio and rate reasoning to solve real-world (with a context) and mathematical (void of context) problems, using strategies such as reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations involving unit rate problems.

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

STANDARD / AREA OF LEARNING	UT.6.EE.	EXPRESSIONS AND EQUATIONS (6.EE)
OBJECTIVE / STRAND		Apply and extend previous understandings of arithmetic to algebraic expressions involving exponents and variables (Standards 6.EE.1–4). They reason about and solve one-variable equations and inequalities (Standards 6.EE.5–8). Represent and analyze quantitative relationships between dependent and independent variables in a real-world context (Standard 6.EE.9).

INDICATOR / CLUSTER 6.EE.5. Understand solving an equation or inequality as a process of answering the question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

**Utah Core Standards
Science
Grade 5 - Adopted: 2019**

STANDARD / AREA OF LEARNING		SEEd - Grade 5 (2019)
OBJECTIVE / STRAND	Strand 5.3:	CYCLING OF MATTER IN ECOSYSTEMS
INDICATOR / CLUSTER		Matter cycles within ecosystems and can be traced from organism to organism. Plants use energy from the Sun to change air and water into matter needed for growth. Animals and decomposers consume matter for their life functions, continuing the cycling of matter. Human behavior can affect the cycling of matter. Scientists and engineers design solutions to conserve Earth's environments and resources.

EXPECTATION / STANDARD Standard 5.3.1. Construct an explanation that plants use air, water, and energy from sunlight to produce plant matter needed for growth. Emphasize photosynthesis at a conceptual level and that plant matter comes mostly from air and water, not from the soil. Photosynthesis at the cellular level will be taught in Grades 6 through 8. (LS1.C)

EXPECTATION / STANDARD Standard 5.3.4. Evaluate design solutions whose primary function is to conserve Earth's environments and resources. Define the problem, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution. Emphasize how humans can balance everyday needs (agriculture, industry, and energy) while conserving Earth's environments and resources. (ESS3.A, ESS3.C, ETS1.A, ETS1.B, ETS1.C)

**Utah Core Standards
Science
Grade 6 - Adopted: 2015**

STANDARD / AREA OF LEARNING		SEEd - Grade 6 (2017)
OBJECTIVE / STRAND	Strand 6.4:	STABILITY AND CHANGE IN ECOSYSTEMS

INDICATOR / CLUSTER		The study of ecosystems includes the interaction of organisms with each other and with the physical environment. Consistent interactions occur within and between species in various ecosystems as organisms obtain resources, change the environment, and are affected by the environment. This influences the flow of energy through an ecosystem, resulting in system variations. Additionally, ecosystems benefit humans through processes and resources, such as the production of food, water and air purification, and recreation opportunities. Scientists and engineers investigate interactions among organisms and evaluate design solutions to preserve biodiversity and ecosystem resources.
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EXPECTATION / STANDARD	Standard 6.4.5	Evaluate competing design solutions for preserving ecosystem services that protect resources and biodiversity based on how well the solutions maintain stability within the ecosystem. Emphasize obtaining, evaluating, and communicating information of differing design solutions. Examples could include policies affecting ecosystems, responding to invasive species or solutions for the preservation of ecosystem resources specific to Utah, such as air and water quality and prevention of soil erosion.
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Grade 6 - Adopted: 2013

STANDARD / AREA OF LEARNING		Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Key Ideas and Details

INDICATOR / CLUSTER	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.
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INDICATOR / CLUSTER	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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STANDARD / AREA OF LEARNING		Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Craft and Structure

INDICATOR / CLUSTER	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.
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INDICATOR / CLUSTER	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.
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STANDARD / AREA OF LEARNING		Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Integration of Knowledge and Ideas

INDICATOR / CLUSTER	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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INDICATOR / CLUSTER	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.
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STANDARD / AREA OF LEARNING		Reading Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Range of Reading and Level of Text Complexity

INDICATOR / CLUSTER	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.
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STANDARD / AREA OF LEARNING		Writing Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Text Types and Purposes
INDICATOR / CLUSTER	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

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

STANDARD / AREA OF LEARNING		Writing Standards for Literacy in Science and Technical Subjects
OBJECTIVE / STRAND		Production and Distribution of Writing

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

INDICATOR / CLUSTER 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.

**Utah Core Standards
Technology Education
Grade 5 - Adopted: 2019**

STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Concepts
INDICATOR / CLUSTER		Data and Analysis (DA):

EXPECTATION / STANDARD Computing systems exist to process data. The amount of digital data generated in the world is rapidly expanding, and the need to process data effectively is increasingly important. Data is collected and stored so it can be analyzed to better understand the world and make more accurate predictions.

STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Concepts
INDICATOR / CLUSTER		Algorithms and Programming (AP):

EXPECTATION / STANDARD An algorithm is a sequence of steps designed to accomplish a specific task. Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems. The development process to create meaningful and efficient programs involves choosing which information to use and how to process and store it, breaking apart large problems into smaller ones, recombining existing solutions, and analyzing different solutions.

STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 1:	Fostering an Inclusive Computing Culture
EXPECTATION / STANDARD		By the end of Grade 5, students should be able to:

INDICATOR	1	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.
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INDICATOR	2	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.
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STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 2:	Collaborating Around Computing
EXPECTATION / STANDARD		By the end of Grade 5, students should be able to:

INDICATOR	2	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.
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STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 3:	Recognizing and Defining Computational Problems
EXPECTATION / STANDARD		By the end of Grade 5, students should be able to:

INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
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INDICATOR	3	Evaluate whether it is appropriate and feasible to solve a problem computationally.
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STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 5:	Creating Computational Artifacts
EXPECTATION / STANDARD		By the end of Grade 5, students should be able to:

INDICATOR	1	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, considering key features, time and resource constraints, and user expectations.
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INDICATOR	2	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
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STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 6:	Testing and Refining Computational Artifacts
EXPECTATION / STANDARD		By the end of Grade 5, students should be able to:

INDICATOR	1	Systematically test computational artifacts by considering all scenarios and using test cases.
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STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Algorithms and Programming (AP):
INDICATOR / CLUSTER	Standard 5.AP.1.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Practice 3: Recognizing and Defining Computational Problems and Practice 6: Testing and Refining Computational Artifacts)

EXPECTATION / STANDARD Students will compare different algorithms that achieve the same result, and determine which algorithm is more appropriate. For example, students will compare different ways to get ready in the morning before school or which is the best route to get to the lunchroom.

STANDARD / AREA OF LEARNING		Utah K-5 Computer Science Standards
OBJECTIVE / STRAND		Algorithms and Programming (AP):
INDICATOR / CLUSTER	Standard 5.AP.4.	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others. (Practice 1: Fostering an Inclusive Computing Culture and Practice 5: Creating Computational Artifacts)

EXPECTATION / STANDARD Students will plan and develop a solution for another person's problem. For example, a student has a hard time completing homework. The team designs a solution for how to manage time in order to complete homework, gathers data on the new solution, and revises the solution.

**Utah Core Standards
Technology Education
Grade 6 - Adopted: 2019**

STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Concepts
INDICATOR / CLUSTER		Data and Analysis (DA):

EXPECTATION / STANDARD		Computing systems exist to process data. The amount of digital data generated in the world is rapidly expanding, and the need to process data effectively is increasingly important. Data is collected and stored so it can be analyzed to better understand the world and make more accurate predictions.
STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Concepts
INDICATOR / CLUSTER		Algorithms and Programming (AP):

EXPECTATION / STANDARD An algorithm is a sequence of steps designed to accomplish a specific task. Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems. The development process to create meaningful and efficient programs involves choosing which information to use and how to process and store it, breaking apart large problems into smaller ones, recombining existing solutions, and analyzing different solutions.

STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 1:	Fostering an Inclusive Computing Culture

EXPECTATION / STANDARD By the end of Grade 12, students should be able to:

INDICATOR 1 Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

INDICATOR 2 Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 2:	Collaborating Around Computing

EXPECTATION / STANDARD By the end of Grade 12, students should be able to:

INDICATOR 2 Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 3:	Recognizing and Defining Computational Problems

EXPECTATION / STANDARD		By the end of Grade 12, students should be able to:
INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

INDICATOR	3	Evaluate whether it is appropriate and feasible to solve a problem computationally.
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STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 4:	Developing and Using Abstractions
EXPECTATION / STANDARD		By the end of Grade 12, students should be able to:

INDICATOR	3	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
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STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 5:	Creating Computational Artifacts
EXPECTATION / STANDARD		By the end of Grade 12, students should be able to:

INDICATOR	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.
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INDICATOR	2	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
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STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 6:	Testing and Refining Computational Artifacts
EXPECTATION / STANDARD		By the end of Grade 12, students should be able to:

INDICATOR	1	Systematically test computational artifacts by considering all scenarios and using test cases.
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STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Computing Systems (CS):
INDICATOR / CLUSTER	Standard 6.CS.1.	Utilize troubleshooting strategies to resolve hardware and software issues in a logical order. (Practice 4: Developing and Using Abstractions)

EXPECTATION / STANDARD	Students will be able to utilize a step-by-step approach to identify and resolve problems with hardware and software. For example, a checklist can be used to ensure that possible solutions are not overlooked such as checking for writing conventions before finalizing a writing assignment. Students may refer to the order of operations when solving a math equation. Students may search for technical information online when solving problems. A flow diagram may be used to determine possible next steps.
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STANDARD / AREA OF LEARNING	Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND	Algorithms and Programming (AP):
INDICATOR / CLUSTER	Standard 6.AP.1. Design and illustrate algorithms to efficiently solve complex problems by utilizing pseudocode and/or other descriptive methods. (Practice 3: Recognizing and defining computational problems)

EXPECTATION / STANDARD	Students will decompose or design algorithms (how to instructions) utilizing pseudocode to solve complex problems. Students will be able to decompose a real-world problem and illustrate the decision-making process in a well-organized flowchart, storyboard, ordered directions, notations, or other method. For example, the students might create a flowchart to illustrate which equipment to use for recess based on the weather, play preference, and a student's energy level.
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STANDARD / AREA OF LEARNING	Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND	Algorithms and Programming (AP):
INDICATOR / CLUSTER	Standard 6.AP.2. Create naming conventions for variables that support the debugging process and incorporate these variables into a simple program. (Practice 7: Communicating about Computing)

EXPECTATION / STANDARD	To make the debugging process easier, students will create and name variables that store data in a meaningful and logical way. For example, when writing an algorithm, students will incorporate names based on the command function such as use the variable "turn" to describe direction, "loop" for repeating tasks.
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**Vermont Content Standards
Mathematics
Grade 5 - Adopted: 2010 (CCSS)**

STANDARD / STRAND	VT.MP.	Mathematical Practices
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.2.	Reason abstractly and quantitatively.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.4.	Model with mathematics.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.5.	Use appropriate tools strategically.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.7.	Look for and make use of structure.
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**Vermont Content Standards
Mathematics
Grade 6 - Adopted: 2010 (CCSS)**

STANDARD / STRAND	VT.MP.	Mathematical Practices
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.2.	Reason abstractly and quantitatively.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.4.	Model with mathematics.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.5.	Use appropriate tools strategically.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.7.	Look for and make use of structure.
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STANDARD / STRAND	VT.6.RP.	Ratios and Proportional Relationships
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Understand ratio concepts and use ratio reasoning to solve problems.
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	6.RP.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
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GRADE LEVEL EXPECTATION	6.RP.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
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STANDARD / STRAND	VT.6.EE.	Expressions and Equations
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Reason about and solve one-variable equations and inequalities.

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
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**Vermont Content Standards
Science
Grade 5 - Adopted: 2014**

STANDARD / STRAND	VT.5-LS.	LIFE SCIENCE
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	5-LS1.	From Molecules to Organisms: Structures and Processes
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		Students who demonstrate understanding can:

GRADE LEVEL EXPECTATION	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
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STANDARD / STRAND	VT.5-ESS.	EARTH AND SPACE SCIENCE
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	5-ESS3.	Earth and Human Activity
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		Students who demonstrate understanding can:

GRADE LEVEL EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
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STANDARD / STRAND	VT.3-5-ETS.	ENGINEERING DESIGN
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	3-5-ETS1.	Engineering Design
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		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.
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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.

**Vermont Content Standards
Science
Grade 6 - Adopted: 2014**

STANDARD / STRAND	VT.MS-LS.	LIFE SCIENCE
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		Students who demonstrate understanding can:

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

STANDARD / STRAND	VT.MS-ESS.	EARTH AND SPACE SCIENCE
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MS-ESS3.	Earth and Human Activity
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		Students who demonstrate understanding can:

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

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

STANDARD / STRAND	VT.MS-ETS.	ENGINEERING DESIGN
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MS-ETS1.	Engineering Design
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		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.
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Grade 6 - Adopted: 2010

STANDARD / STRAND	VT.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Key Ideas and Details

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	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.
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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STANDARD / STRAND	VT.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Craft and Structure

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	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.
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	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.
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STANDARD / STRAND	VT.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Integration of Knowledge and Ideas

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	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.
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STANDARD / STRAND	VT.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Range of Reading and Level of Text Complexity
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL 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 / STRAND	VT.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Text Types and Purposes
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
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GRADE LEVEL EXPECTATION WHST.6-8.2(d) Use precise language and domain-specific vocabulary to inform about or explain the topic.

STANDARD / STRAND	VT.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		Production and Distribution of Writing
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GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL WHST.6-8.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL 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.

**Vermont Content Standards
Technology Education
Grade 5 - Adopted: 2017**

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

STANDARD / STRAND	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.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD 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 KNOWLEDGE AND SKILL / STANDARD	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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STANDARD / STRAND	ISTE-S.5.	Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
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**Vermont Content Standards
Technology Education
Grade 6 - Adopted: 2017**

STANDARD / STRAND	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.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
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STANDARD / STRAND	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.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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STANDARD / STRAND	ISTE-S.5.	Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
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ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

**Virginia Standards of Learning
Mathematics
Grade 6 - Adopted: 2016**

STRAND / TOPIC	VA.PFA.6.	Patterns, Functions, and Algebra
STANDARD / STRAND	6.12.	The student will
INDICATOR / STANDARD	6.12.a.	Represent a proportional relationship between two quantities, including those arising from practical situations.
INDICATOR / STANDARD	6.12.c.	Determine whether a proportional relationship exists between two quantities.
INDICATOR / STANDARD	6.12.d.	Make connections between and among representations of a proportional relationship between two quantities using verbal descriptions, ratio tables, and graphs.

**Virginia Standards of Learning
Science
Grade 5 - Adopted: 2018**

STRAND / TOPIC		Grade Five – Transforming matter and energy
STANDARD / STRAND		Scientific and Engineering Practices
INDICATOR / STANDARD	5.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR	5.1.b.	planning and carrying out investigations
PROGRESS INDICATOR	5.1.b.5.	use tools and/or materials to design and/or build a device that solves a specific problem

STRAND / TOPIC		Grade Five – Transforming matter and energy
STANDARD / STRAND		Scientific and Engineering Practices
INDICATOR / STANDARD	5.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR	5.1.f.	obtaining, evaluating, and communicating information

PROGRESS INDICATOR 5.1.f.2. communicate scientific information, design ideas, and/or solutions with others

STRAND / TOPIC		Grade Five – Transforming matter and energy
STANDARD / STRAND		Earth Resources
INDICATOR / STANDARD	5.9.	The student will investigate and understand that the conservation of energy resources is important. Key ideas include:

INDICATOR 5.9.b. individuals and communities have means of conserving both energy and matter;

**Virginia Standards of Learning
Science
Grade 6 - Adopted: 2018**

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.a.	asking questions and defining problems

INDICATOR 6.1.a.3. offer simple solutions to design problems

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.b.	planning and carrying out investigations

INDICATOR 6.1.b.2. evaluate the accuracy of various methods for collecting data

INDICATOR 6.1.b.4. use tools and materials to design and/or build a device to solve a specific problem

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.c.	interpreting, analyzing, and evaluating data

INDICATOR 6.1.c.1. organize data sets to reveal patterns that suggest relationships

INDICATOR 6.1.c.2. construct, analyze, and interpret graphical displays of data

INDICATOR 6.1.c.3. compare and contrast data collected by different groups and discuss similarities and differences in findings

INDICATOR 6.1.c.4. use data to evaluate and refine design solutions

STRAND / TOPIC		Grade Six – Our world; our responsibility
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STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.d.	constructing and critiquing conclusions and explanations

INDICATOR 6.1.d.3. generate and compare multiple solutions to problems based on how well they meet the criteria and constraints

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.e.	developing and using models

INDICATOR 6.1.e.2. use, develop, and revise models to predict and explain phenomena

INDICATOR 6.1.e.3. evaluate limitations of models

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.1.	The student will demonstrate an understanding of scientific and engineering practices by:
INDICATOR / STANDARD	6.1.f.	obtaining, evaluating, and communicating information

INDICATOR 6.1.f.1. read scientific texts, including those adapted for classroom use, to obtain scientific and/or technical information

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.6.	The student will investigate and understand that water has unique physical properties and has a role in the natural and human-made environment. Key ideas include:

INDICATOR / STANDARD 6.6.f. water is important for agriculture, power generation, and public health.

STRAND / TOPIC		Grade Six – Our world; our responsibility
STANDARD / STRAND	6.9.	The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include:

INDICATOR / STANDARD 6.9.a. natural resources are important to protect and maintain;

INDICATOR / STANDARD 6.9.e. preventive measures can protect land-use and reduce environmental hazards;

INDICATOR / STANDARD 6.9.f. there are cost/benefit tradeoffs in conservation policies.

STRAND / TOPIC	VA.CS.	Computer Science
STANDARD / STRAND		Algorithms and Programming
INDICATOR / STANDARD	5.1.	The student will construct sets of step-by-step instructions (algorithms) both independently and collaboratively,

INDICATOR 5.1.a. Using sequencing.

STRAND / TOPIC	VA.CS.	Computer Science
STANDARD / STRAND		Algorithms and Programming
INDICATOR / STANDARD	5.2.	The student will construct programs to accomplish a task as a means of creative expression using a block or text based programming language, both independently and collaboratively

INDICATOR 5.2.a. Using sequencing.

STRAND / TOPIC	VA.CS.	Computer Science
STANDARD / STRAND		Algorithms and Programming

INDICATOR / STANDARD 5.3. The student will analyze, correct, and improve (debug) an algorithm that includes sequencing, events, loops, conditionals, and variables. [Related SOL areas - Math: Problem Solving, English: Editing]

STRAND / TOPIC	VA.CS.	Computer Science
STANDARD / STRAND		Data and Analysis

INDICATOR / STANDARD 5.11. The student will answer a question by using a computer to manipulate data in order for the student to draw conclusions and make predictions. [Related SOL: Math 5.16, 5.17, VS.1c and j]

Grade 5 - Adopted: 2020

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	KC.	Knowledge Constructor (KC)
INDICATOR / STANDARD		Students critically curate a variety of digital resources using appropriate technologies, including assistive technologies, to construct knowledge, produce creative digital works, and make meaningful learning experiences for themselves and others.

INDICATOR KC.D. Actively explore real-world issues and problems, develop ideas and theories, and pursue answers and solutions.

PROGRESS INDICATOR KC.D.i. Students use digital resources and tools to explore real-world issues and problems and collaborate with others to find answers or solutions.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	ID.	Innovative Designer (ID)

INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
INDICATOR	ID.A.	Know and use appropriate technologies in a purposeful design process for generating ideas, testing theories, creating innovative digital works, or solving authentic problems.

PROGRESS INDICATOR	ID.A.i.	With guidance from an educator, students use appropriate technologies to explore and practice how a design process works to generate ideas, consider solutions, plan to solve a problem, or create innovative products that are shared with others.
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STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
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STANDARD / STRAND	ID.	Innovative Designer (ID)
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INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
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INDICATOR	ID.B.	Select and use appropriate technologies to plan and manage a design process that considers design constraints and calculated risks.
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PROGRESS INDICATOR	ID.B.i.	With guidance from an educator, students select and use appropriate technologies to plan and manage a design process.
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STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
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STANDARD / STRAND	ID.	Innovative Designer (ID)
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INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
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INDICATOR	ID.C.	Use appropriate technologies to develop, test, and refine prototypes as part of a cyclical design process.
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PROGRESS INDICATOR	ID.C.i.	With guidance from an educator, students use appropriate technologies in a cyclical design process to develop prototypes and reflect on the role of trial and error.
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STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
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STANDARD / STRAND	ID.	Innovative Designer (ID)
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INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
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INDICATOR	ID.D.	Exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.
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PROGRESS INDICATOR	ID.D.i.	With guidance from an educator, students demonstrate perseverance when working with open-ended problem.
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STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
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STANDARD / STRAND	CT.	Computational Thinker (CT)
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INDICATOR / STANDARD		Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods, including those that leverage assistive technologies, to develop and test solutions.
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INDICATOR	CT.A.	Formulate problem definitions suited for technology-assisted methods such as data analysis, modeling and algorithmic thinking in exploring and finding solutions.
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PROGRESS INDICATOR	CT.A.i.	With guidance from an educator, students create, identify, explore, and solve problems by selecting technology-assisted methods such as data analysis, modeling, and algorithmic thinking.
STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CT.	Computational Thinker (CT)
INDICATOR / STANDARD		Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods, including those that leverage assistive technologies, to develop and test solutions.
INDICATOR	CT.C.	Break problems into component parts, extract key information, and develop descriptive models, using technologies when appropriate, to understand complex systems or facilitate problem-solving.
PROGRESS INDICATOR	CT.C.i.	Students break down problems into smaller parts, identify key information, and propose solutions using technologies, when appropriate.
STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CC.	Creative Communicator (CC)
INDICATOR / STANDARD		Students communicate clearly and express themselves creatively for a variety of purposes using appropriate technologies (including assistive technologies), styles, formats, and digital media appropriate to their goals.
INDICATOR	CC.B.	Create original works or responsibly repurpose or remix digital resources into new creations.
PROGRESS INDICATOR	CC.B.i.	Students use appropriate technologies to create original works and learn strategies for remixing other digital works to create new digital works.
STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CC.	Creative Communicator (CC)
INDICATOR / STANDARD		Students communicate clearly and express themselves creatively for a variety of purposes using appropriate technologies (including assistive technologies), styles, formats, and digital media appropriate to their goals.
INDICATOR	CC.C.	Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.
PROGRESS INDICATOR	CC.C.i.	Students create digital works to communicate ideas visually and graphically.
STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	GC.	Global Collaborator (GC)
INDICATOR / STANDARD		Students use appropriate technologies, including assistive technologies, to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
INDICATOR	GC.D.	Explore local and global issues and use collaborative technologies to work with others to investigate solutions.
PROGRESS INDICATOR	GC.D.i.	Students use collaborative technologies to work with others to understand problems and investigate solutions to local and global issues.

Technology Education

Grade 6 - Adopted: 2020

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	KC.	Knowledge Constructor (KC)
INDICATOR / STANDARD		Students critically curate a variety of digital resources using appropriate technologies, including assistive technologies, to construct knowledge, produce creative digital works, and make meaningful learning experiences for themselves and others.
INDICATOR	KC.D.	Actively explore real-world issues and problems, develop ideas and theories, and pursue answers and solutions.

PROGRESS INDICATOR KC.D.m. Students use digital resources and tools to explore real-world issues and problems and actively pursue solutions.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	ID.	Innovative Designer (ID)
INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
INDICATOR	ID.A.	Know and use appropriate technologies in a purposeful design process for generating ideas, testing theories, creating innovative digital works, or solving authentic problems.

PROGRESS INDICATOR ID.A.m. In collaboration with an educator, students use appropriate technologies in a design process to generate ideas, create innovative products, or solve authentic problems.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	ID.	Innovative Designer (ID)
INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
INDICATOR	ID.B.	Select and use appropriate technologies to plan and manage a design process that considers design constraints and calculated risks.

PROGRESS INDICATOR ID.B.m. In collaboration with an educator, students select and use appropriate technologies to plan and manage a design process that identifies design constraints and trade-offs and weighs risks.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	ID.	Innovative Designer (ID)
INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
INDICATOR	ID.C.	Use appropriate technologies to develop, test, and refine prototypes as part of a cyclical design process.

PROGRESS INDICATOR ID.C.m. In collaboration with an educator, students use appropriate technologies in a cyclical design process to develop prototypes and demonstrate the use of setbacks as potential opportunities for improvement.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
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STANDARD / STRAND	ID.	Innovative Designer (ID)
INDICATOR / STANDARD		Students use a variety of technologies, including assistive technologies, within a design process to identify and solve problems by creating new, useful or imaginative solutions or iterations.
INDICATOR	ID.D.	Exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.
PROGRESS INDICATOR	ID.D.m.	In collaboration with an educator, students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CT.	Computational Thinker (CT)
INDICATOR / STANDARD		Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods, including those that leverage assistive technologies, to develop and test solutions.
INDICATOR	CT.A.	Formulate problem definitions suited for technology-assisted methods such as data analysis, modeling and algorithmic thinking in exploring and finding solutions.
PROGRESS INDICATOR	CT.A.m.	Students create, identify, explore, and solve problems using technology-assisted methods such as data analysis, modeling, or algorithmic thinking.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CT.	Computational Thinker (CT)
INDICATOR / STANDARD		Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods, including those that leverage assistive technologies, to develop and test solutions.
INDICATOR	CT.B.	Collect data or identify relevant data sets, use appropriate technologies to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
PROGRESS INDICATOR	CT.B.m.	Students find or organize data and use appropriate technologies to interpret, analyze, and represent data to construct models, predict outcomes, solve problems, and make evidence-based decisions.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CT.	Computational Thinker (CT)
INDICATOR / STANDARD		Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods, including those that leverage assistive technologies, to develop and test solutions.
INDICATOR	CT.C.	Break problems into component parts, extract key information, and develop descriptive models, using technologies when appropriate, to understand complex systems or facilitate problem-solving.
PROGRESS INDICATOR	CT.C.m.	Students break problems into component parts, identify key pieces and use that information to problem solve using technologies, when appropriate.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	CC.	Creative Communicator (CC)
INDICATOR / STANDARD		Students communicate clearly and express themselves creatively for a variety of purposes using appropriate technologies (including assistive technologies), styles, formats, and digital media appropriate to their goals.

INDICATOR	CC.B.	Create original works or responsibly repurpose or remix digital resources into new creations.
PROGRESS INDICATOR	CC.B.m.	Students use appropriate technologies to create new digital works or responsibly repurpose or remix other digital works into new digital works.
STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	GC.	Global Collaborator (GC)
INDICATOR / STANDARD		Students use appropriate technologies, including assistive technologies, to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
INDICATOR	GC.D.	Explore local and global issues and use collaborative technologies to work with others to investigate solutions.
PROGRESS INDICATOR	GC.D.m.	Students use collaborative technologies to work with others to understand problems, investigate and develop solutions related to local and global issues.

**Washington DC Academic Standards
Mathematics
Grade 5 - Adopted: 2010**

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

**Washington DC Academic Standards
Mathematics
Grade 6 - Adopted: 2010**

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

CONTENT STANDARD / STRAND / DISCIPLINE	DC.CC.6.RP.	Ratios and Proportional Relationships
STANDARD / ESSENTIAL SKILL		Understand ratio concepts and use ratio reasoning to solve problems.
STUDENT EXPECTATION / ESSENTIAL SKILL	6.RP.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

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

CONTENT STANDARD / STRAND / DISCIPLINE	DC.CC.6.EE.	Expressions and Equations
STANDARD / ESSENTIAL SKILL		Reason about and solve one-variable equations and inequalities.

STUDENT EXPECTATION / ESSENTIAL SKILL 6.EE.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

CONTENT STANDARD / STRAND / DISCIPLINE	DC.5-LS.	LIFE SCIENCE
STANDARD / ESSENTIAL SKILL	5-LS1.	From Molecules to Organisms: Structures and Processes
STUDENT EXPECTATION / ESSENTIAL SKILL		Students who demonstrate understanding can:

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

CONTENT STANDARD / STRAND / DISCIPLINE	DC.5-ESS.	EARTH AND SPACE SCIENCE
STANDARD / ESSENTIAL SKILL	5-ESS3.	Earth and Human Activity
STUDENT EXPECTATION / ESSENTIAL SKILL		Students who demonstrate understanding can:

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

CONTENT STANDARD / STRAND / DISCIPLINE	DC.3-5-ETS.	ENGINEERING DESIGN
STANDARD / ESSENTIAL SKILL	3-5-ETS1.	Engineering Design
STUDENT EXPECTATION / ESSENTIAL SKILL		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.

**Washington DC Academic Standards
Science
Grade 6 - Adopted: 2013**

CONTENT STANDARD / STRAND / DISCIPLINE	DC.MS-LS.	LIFE SCIENCE
STANDARD / ESSENTIAL SKILL	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics

STUDENT EXPECTATION / ESSENTIAL SKILL		Students who demonstrate understanding can:
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EXPECTATION MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD / STRAND / DISCIPLINE	DC.MS-ESS.	EARTH AND SPACE SCIENCE
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STANDARD / ESSENTIAL SKILL	MS-ESS3.	Earth and Human Activity
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STUDENT EXPECTATION / ESSENTIAL SKILL		Students who demonstrate understanding can:
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EXPECTATION MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

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

CONTENT STANDARD / STRAND / DISCIPLINE	DC.MS-ETS.	ENGINEERING DESIGN
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STANDARD / ESSENTIAL SKILL	MS-ETS1.	Engineering Design
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STUDENT EXPECTATION / ESSENTIAL SKILL		Students who demonstrate understanding can:
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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.

Grade 6 - Adopted: 2010

CONTENT STANDARD / STRAND / DISCIPLINE	DC.6-8.RST.	Reading Standards for Literacy in Science and Technical Subjects
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STANDARD / ESSENTIAL SKILL		Key Ideas and Details
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STUDENT EXPECTATION / ESSENTIAL SKILL	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.
STUDENT EXPECTATION / ESSENTIAL SKILL	6-8.RST.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
CONTENT STANDARD / STRAND / DISCIPLINE	DC.6-8.RST.	Reading Standards for Literacy in Science and Technical Subjects
STANDARD / ESSENTIAL SKILL		Craft and Structure
STUDENT EXPECTATION / ESSENTIAL SKILL	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.
STUDENT EXPECTATION / ESSENTIAL SKILL	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 STANDARD / STRAND / DISCIPLINE	DC.6-8.RST.	Reading Standards for Literacy in Science and Technical Subjects
STANDARD / ESSENTIAL SKILL		Integration of Knowledge and Ideas
STUDENT EXPECTATION / ESSENTIAL SKILL	6-8.RST.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
STUDENT EXPECTATION / ESSENTIAL SKILL	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 STANDARD / STRAND / DISCIPLINE	DC.6-8.RST.	Reading Standards for Literacy in Science and Technical Subjects
STANDARD / ESSENTIAL SKILL		Range of Reading and Level of Text Complexity
STUDENT EXPECTATION / ESSENTIAL SKILL	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 STANDARD / STRAND / DISCIPLINE	DC.6-8.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STANDARD / ESSENTIAL SKILL		Text Types and Purposes
STUDENT EXPECTATION / ESSENTIAL SKILL	6-8.WHST.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

EXPECTATION 6-8.WHST.2.d. Use precise language and domain-specific vocabulary to inform about or explain the topic.

CONTENT STANDARD / STRAND / DISCIPLINE	DC.6-8.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STANDARD / ESSENTIAL SKILL		Production and Distribution of Writing

STUDENT EXPECTATION / ESSENTIAL SKILL 6-8.WHST.4 . Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

STUDENT EXPECTATION / ESSENTIAL SKILL 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.

Washington State K-12 Learning Standards and Guidelines

Mathematics

Grade 5 - Adopted: 2011

EALR	WA.MP.	Mathematical Practices
BIG IDEA / CORE CONTENT	MP.1.	Make sense of problems and persevere in solving them.
BIG IDEA / CORE CONTENT	MP.2.	Reason abstractly and quantitatively.
BIG IDEA / CORE CONTENT	MP.3.	Construct viable arguments and critique the reasoning of others.
BIG IDEA / CORE CONTENT	MP.4.	Model with mathematics.

BIG IDEA / CORE CONTENT	MP.5.	Use appropriate tools strategically.
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BIG IDEA / CORE CONTENT	MP.7.	Look for and make use of structure.
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Washington State K-12 Learning Standards and Guidelines
Mathematics
Grade 6 - Adopted: 2011

EALR	WA.MP.	Mathematical Practices
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BIG IDEA / CORE CONTENT	MP.1.	Make sense of problems and persevere in solving them.
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BIG IDEA / CORE CONTENT	MP.2.	Reason abstractly and quantitatively.
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BIG IDEA / CORE CONTENT	MP.3.	Construct viable arguments and critique the reasoning of others.
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BIG IDEA / CORE CONTENT	MP.4.	Model with mathematics.
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BIG IDEA / CORE CONTENT	MP.5.	Use appropriate tools strategically.
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BIG IDEA / CORE CONTENT	MP.7.	Look for and make use of structure.
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EALR	WA.6.RP.	Ratios and Proportional Relationships
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BIG IDEA / CORE CONTENT		Understand ratio concepts and use ratio reasoning to solve problems.
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CORE CONTENT / CONTENT STANDARD	6.RP.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
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CONTENT STANDARD / PERFORMANCE EXPECTATION	6.RP.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
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EALR	WA.6.EE.	Expressions and Equations
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BIG IDEA / CORE CONTENT		Reason about and solve one-variable equations and inequalities.
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CORE CONTENT / CONTENT STANDARD	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
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Washington State K-12 Learning Standards and Guidelines

Science

Grade 5 - Adopted: 2014

EALR	WA.5-LS.	LIFE SCIENCE
BIG IDEA / CORE CONTENT	5-LS1.	From Molecules to Organisms: Structures and Processes
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

CONTENT STANDARD / PERFORMANCE EXPECTATION	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
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EALR	WA.5-ESS.	EARTH AND SPACE SCIENCE
BIG IDEA / CORE CONTENT	5-ESS3.	Earth and Human Activity
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

CONTENT STANDARD / PERFORMANCE EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
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EALR	WA.3-5-ETS.	ENGINEERING DESIGN
BIG IDEA / CORE CONTENT	3-5-ETS1.	Engineering Design
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

CONTENT STANDARD / PERFORMANCE 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.
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CONTENT STANDARD / PERFORMANCE 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.
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CONTENT STANDARD / PERFORMANCE 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.

Washington State K-12 Learning Standards and Guidelines

Science

Grade 6 - Adopted: 2014

EALR	WA.MS-LS.	LIFE SCIENCE
BIG IDEA / CORE CONTENT	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

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

EALR	WA.MS-ESS.	EARTH AND SPACE SCIENCE
BIG IDEA / CORE CONTENT	MS-ESS3.	Earth and Human Activity
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

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

CONTENT STANDARD / PERFORMANCE 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.

EALR	WA.MS-ETS.	ENGINEERING DESIGN
BIG IDEA / CORE CONTENT	MS-ETS1.	Engineering Design
CORE CONTENT / CONTENT STANDARD		Students who demonstrate understanding can:

CONTENT STANDARD / PERFORMANCE 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.

CONTENT STANDARD / PERFORMANCE 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.
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CONTENT STANDARD / PERFORMANCE 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.
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Grade 6 - Adopted: 2010

EALR	WA.RST. 6-8.	Reading Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Key Ideas and Details

CORE CONTENT / CONTENT STANDARD	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.
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CORE CONTENT / CONTENT STANDARD	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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EALR	WA.RST. 6-8.	Reading Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Craft and Structure

CORE CONTENT / CONTENT STANDARD	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.
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CORE CONTENT / CONTENT STANDARD	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.
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EALR	WA.RST. 6-8.	Reading Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Integration of Knowledge and Ideas

CORE CONTENT / CONTENT STANDARD	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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CORE CONTENT / CONTENT STANDARD	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.
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EALR	WA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Range of Reading and Level of Text Complexity

CORE CONTENT / CONTENT STANDARD 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.

EALR	WA.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Text Types and Purposes
CORE CONTENT / CONTENT STANDARD	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

CONTENT STANDARD / PERFORMANCE EXPECTATION WHST.6-8.2(d) Use precise language and domain-specific vocabulary to inform about or explain the topic.

EALR	WA.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
BIG IDEA / CORE CONTENT		Production and Distribution of Writing

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

CORE CONTENT / CONTENT STANDARD WHST.6-8.6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

**Washington State K-12 Learning Standards and Guidelines
Technology Education
Grade 5 - Adopted: 2018**

EALR	WA.ET.3-5.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	3-5.4.	Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

CORE CONTENT / CONTENT STANDARD 3-5.4.b. Students use digital and non-digital tools to plan and manage a design process.

EALR	WA.ET.3-5.	Educational Technology Learning Standards
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BIG IDEA / CORE CONTENT	3-5.5.	Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
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CORE CONTENT / CONTENT STANDARD	3-5.5.a.	Students explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking, with guidance from an educator.
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CORE CONTENT / CONTENT STANDARD	3-5.5.d.	Students understand and explore basic concepts related to automation, patterns and algorithmic thinking.
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EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 1B: 3-5
CORE CONTENT / CONTENT STANDARD	1B-CS.	Computing Systems

CONTENT STANDARD / PERFORMANCE EXPECTATION	1B-CS-03.	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. (P. 6.2)
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EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 1B: 3-5
CORE CONTENT / CONTENT STANDARD	1B-AP.	Algorithms and Programming

CONTENT STANDARD / PERFORMANCE EXPECTATION	1B-AP-08.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (P. 6.3, P. 3.3)
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CONTENT STANDARD / PERFORMANCE EXPECTATION	1B-AP-11.	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. (P. 3.2)
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CONTENT STANDARD / PERFORMANCE EXPECTATION	1B-AP-12.	Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. (P. 5.3)
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CONTENT STANDARD / PERFORMANCE EXPECTATION	1B-AP-13.	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. (P. 1.1, P. 5.1)
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CONTENT STANDARD / PERFORMANCE EXPECTATION 1B-AP-15. Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. (P. 6.1, P. 6.2)

EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 1B: 3-5
CORE CONTENT / CONTENT STANDARD	1B-IC.	Impacts of Computing

CONTENT STANDARD / PERFORMANCE EXPECTATION 1B-IC-19. Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users. (P. 1.2)

**Washington State K-12 Learning Standards and Guidelines
Technology Education
Grade 6 - Adopted: 2018**

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	6-8.3.	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.

CORE CONTENT / CONTENT STANDARD 6-8.3.d. Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	6-8.4.	Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

CORE CONTENT / CONTENT STANDARD 6-8.4.a. Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	6-8.5.	Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

CORE CONTENT / CONTENT STANDARD 6-8.5.a. Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.

CORE
CONTENT /
CONTENT
STANDARD

6-8.5.d. Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 2: 6-8
CORE CONTENT / CONTENT STANDARD	2-CS.	Computing Systems

CONTENT
STANDARD /
PERFORMANCE
EXPECTATION

2-CS-01. Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices. (P. 3.3)

CONTENT
STANDARD /
PERFORMANCE
EXPECTATION

2-CS-03. Systematically identify and fix problems with computing devices and their components. (P. 6.2)

EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 2: 6-8
CORE CONTENT / CONTENT STANDARD	2-AP.	Algorithms and Programming

CONTENT
STANDARD /
PERFORMANCE
EXPECTATION

2-AP-10. Use flowcharts and/or pseudocode to address complex problems as algorithms. (P. 4.4, 4.1)

CONTENT
STANDARD /
PERFORMANCE
EXPECTATION

2-AP-18. Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P. 2.2)

EALR		Computer Science
BIG IDEA / CORE CONTENT		Level 2: 6-8
CORE CONTENT / CONTENT STANDARD	2-IC.	Impacts of Computing

CONTENT
STANDARD /
PERFORMANCE
EXPECTATION

2-IC-22. Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P. 2.4, P. 5.2)

CONTENT STANDARD / COURSE	WV.M.MH M.	Mathematical Habits of Mind
CONTENT STANDARD / OBJECTIVE	MHM1.	Make sense of problems and persevere in solving them.
CONTENT STANDARD / OBJECTIVE	MHM2.	Reason abstractly and quantitatively.
CONTENT STANDARD / OBJECTIVE	MHM3.	Construct viable arguments and critique the reasoning of others.
CONTENT STANDARD / OBJECTIVE	MHM4.	Model with mathematics.
CONTENT STANDARD / OBJECTIVE	MHM5.	Use appropriate tools strategically.
CONTENT STANDARD / OBJECTIVE	MHM7.	Look for and make use of structure.

West Virginia College and Career Readiness Standards

Mathematics

CONTENT STANDARD / COURSE	WV.M.MH M.	Mathematical Habits of Mind
CONTENT STANDARD / OBJECTIVE	MHM1.	Make sense of problems and persevere in solving them.
CONTENT STANDARD / OBJECTIVE	MHM2.	Reason abstractly and quantitatively.
CONTENT STANDARD / OBJECTIVE	MHM3.	Construct viable arguments and critique the reasoning of others.
CONTENT STANDARD / OBJECTIVE	MHM4.	Model with mathematics.
CONTENT STANDARD / OBJECTIVE	MHM5.	Use appropriate tools strategically.

CONTENT STANDARD / OBJECTIVE
 MHM7. Look for and make use of structure.

CONTENT STANDARD / COURSE	WV.M.6.R PP.	Ratios and Proportional Relationships
CONTENT STANDARD / OBJECTIVE		Understand ratio concepts and use ratio reasoning to solve problems.
OBJECTIVE / EXPECTATION	M.6.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

GRADE LEVEL EXPECTATION
 M.6.3.a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD / COURSE	WV.M.6.E E.	Expressions and Equations
CONTENT STANDARD / OBJECTIVE		Reason about and solve one-variable equations and inequalities.

OBJECTIVE / EXPECTATION
 M.6.16. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

**West Virginia College and Career Readiness Standards
 Science
 Grade 5 - Adopted: 2021**

CONTENT STANDARD / COURSE		Science Indicators Grades 3-5
CONTENT STANDARD / OBJECTIVE		College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION		Nature of Science

GRADE LEVEL EXPECTATION
 Scientific knowledge is obtained through a combination of observations of the natural world and inferences based on those observations.

CONTENT STANDARD / COURSE		Science Indicators Grades 3-5
CONTENT STANDARD / OBJECTIVE		College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION		Practices of Scientists and Engineers

GRADE LEVEL EXPECTATION
 Developing and using models

GRADE LEVEL EXPECTATION
 Planning and carrying out investigations

GRADE LEVEL EXPECTATION	Analyzing and interpreting data
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GRADE LEVEL EXPECTATION	Constructing explanations and designing solutions
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GRADE LEVEL EXPECTATION	Obtaining, evaluating, and communicating information
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CONTENT STANDARD / COURSE	Science Indicators Grades 3-5
CONTENT STANDARD / OBJECTIVE	College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION	Science Connecting Concepts

GRADE LEVEL EXPECTATION	Investigating and explaining cause and effect
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CONTENT STANDARD / COURSE	Science Indicators Grades 3-5
CONTENT STANDARD / OBJECTIVE	College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION	Science Literacy

GRADE LEVEL EXPECTATION	Utilizing and connecting ideas among informational (factual) scientific texts
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GRADE LEVEL EXPECTATION	Integrating and applying information presented in various media formats when writing and speaking
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GRADE LEVEL EXPECTATION	Comparing and contrasting sets of data
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GRADE LEVEL EXPECTATION	Building and appropriately using science domain vocabulary and phrases
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GRADE LEVEL EXPECTATION	Interpreting and applying visually expressed information (e.g., flowchart, diagram, model, graph, or table)
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CONTENT STANDARD / COURSE	Science – Grade 5
CONTENT STANDARD / OBJECTIVE	Life Science
OBJECTIVE / EXPECTATION	Matter and Energy in Organisms and Ecosystems

GRADE LEVEL EXPECTATION	S.5.5.	Support an argument that plants get the materials they need for growth chiefly from air and water.
CONTENT STANDARD / COURSE		Science – Grade 5
CONTENT STANDARD / OBJECTIVE		Earth and Space Science
OBJECTIVE / EXPECTATION		Earth's Systems

GRADE LEVEL EXPECTATION S.5.9. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CONTENT STANDARD / COURSE		Science – Grade 5
CONTENT STANDARD / OBJECTIVE		Engineering, Technology, and Applications of Science
OBJECTIVE / EXPECTATION		Engineering Design

GRADE LEVEL EXPECTATION S.5.15. 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 S.5.16. 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 S.5.17. 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.

West Virginia College and Career Readiness Standards

Science

Grade 6 - Adopted: 2021

CONTENT STANDARD / COURSE		Science Indicators Grades 6-8
CONTENT STANDARD / OBJECTIVE		College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION		Nature of Science

GRADE LEVEL EXPECTATION Scientific knowledge is obtained through a combination of observations of the natural world and inferences based on those observations.

CONTENT STANDARD / COURSE		Science Indicators Grades 6-8
CONTENT STANDARD / OBJECTIVE		College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION		Practices of Scientists and Engineers

GRADE LEVEL EXPECTATION	Developing and using models
GRADE LEVEL EXPECTATION	Planning and carrying out investigations
GRADE LEVEL EXPECTATION	Analyzing and interpreting data
GRADE LEVEL EXPECTATION	Constructing explanations and designing solutions
GRADE LEVEL EXPECTATION	Obtaining, evaluating, and communicating information

CONTENT STANDARD / COURSE	Science Indicators Grades 6-8
CONTENT STANDARD / OBJECTIVE	College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION	Science Connecting Concepts

GRADE LEVEL EXPECTATION Investigating and explaining cause and effect

CONTENT STANDARD / COURSE	Science Indicators Grades 6-8
CONTENT STANDARD / OBJECTIVE	College- and Career-Readiness Indicators for Science
OBJECTIVE / EXPECTATION	Science Literacy

GRADE LEVEL EXPECTATION Correctly utilizing and explaining visually expressed information (e.g., flowchart, diagram, model, graph, table, or digital mapping technology) in a science narrative.

GRADE LEVEL EXPECTATION Appropriately using technical terminology or scientific concepts and processes to create visually expressed information

GRADE LEVEL EXPECTATION Reading with understanding articles about science in the popular press and engaging in social conversation about the validity of the conclusions

CONTENT STANDARD / COURSE	Science – Grade 6
CONTENT STANDARD / OBJECTIVE	LIFE Science
OBJECTIVE / EXPECTATION	Interdependent Relationships in Ecosystems

GRADE LEVEL EXPECTATION S.6.2. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD / COURSE		Science – Grade 6
CONTENT STANDARD / OBJECTIVE		PHYSICAL Science
OBJECTIVE / EXPECTATION		Waves and Electromagnetic Radiation

GRADE LEVEL EXPECTATION S.6.12. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

CONTENT STANDARD / COURSE		Science – Grade 6
CONTENT STANDARD / OBJECTIVE		Engineering, Technology, and Applications of Science
OBJECTIVE / EXPECTATION		Engineering Design

GRADE LEVEL EXPECTATION S.6.20. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution.

**West Virginia College and Career Readiness Standards
Technology Education
Grade 5 - Adopted: 2019**

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Technology 3-5
OBJECTIVE / EXPECTATION		Innovative Designer

GRADE LEVEL EXPECTATION T.3-5.13. With support and guidance, select appropriate technology tools to solve problems and communicate information.

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Computer Science 3-5
OBJECTIVE / EXPECTATION		Computer Systems and Computational Thinking

GRADE LEVEL EXPECTATION CS.3-5.1. Verbalize the steps to solve a problem.

GRADE LEVEL EXPECTATION CS.3-5.2. Work together in a team to solve a problem.

**West Virginia College and Career Readiness Standards
Technology Education
Grade 6 - Adopted: 2019**

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Computer Science 6-8
OBJECTIVE / EXPECTATION		Computer Systems and Computational Thinking

GRADE LEVEL EXPECTATION CS.6-8.1. Analyze and devise problem-solving strategies cooperatively and collaboratively.

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Computer Science 6-8
OBJECTIVE / EXPECTATION		Programming and Algorithms

GRADE LEVEL EXPECTATION CS.6-8.10. Analyze the problem and use a tool (e.g., flow chart) to design an algorithm to solve complex problems.

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Discovering Computer Science
OBJECTIVE / EXPECTATION		Computer Systems and Computational Thinking

GRADE LEVEL EXPECTATION CS.DCS.1. Use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, and evaluation).

GRADE LEVEL EXPECTATION CS.DCS.3. Define an algorithm as a sequence of instructions that can be processed by a computer.

GRADE LEVEL EXPECTATION CS.DCS.5. Act out searching and sorting algorithms.

GRADE LEVEL EXPECTATION CS.DCS.9. Interact with content-specific models and simulations (e.g., ecosystems, epidemics, molecular dynamics) to support learning and research.

GRADE LEVEL EXPECTATION CS.DCS.10. Evaluate what kinds of problems can be solved using modeling and simulation.

GRADE LEVEL EXPECTATION CS.DCS. 12. Use abstraction to decompose a problem into sub problems.

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Discovering Computer Science
OBJECTIVE / EXPECTATION		Programming and Algorithms

GRADE LEVEL EXPECTATION CS.DCS. 20. Select appropriate tools and technology resources to accomplish a variety of tasks and solve problems.

GRADE LEVEL EXPECTATION CS.DCS. 23. Demonstrate an understanding of algorithms and their practical application.

GRADE LEVEL EXPECTATION CS.DCS. 27. Demonstrate characteristics used in open ended problem-solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge).

CONTENT STANDARD / COURSE	2520.14.	West Virginia College- and Career-Readiness Standards for Technology and Computer Science
CONTENT STANDARD / OBJECTIVE		Discovering Computer Science
OBJECTIVE / EXPECTATION		Computers and Communications Devices

GRADE LEVEL EXPECTATION CS.DCS. 36. Describe ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).

**Wisconsin Academic Standards
Mathematics
Grade 5 - Adopted: 2021**

DOMAIN		Standards for Mathematical Practice
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CONTENT STANDARD Math Practice 1: Make sense of problems and persevere in solving them.

CONTENT STANDARD Math Practice 2: Reason abstractly and quantitatively.

CONTENT STANDARD Math Practice 3: Construct viable arguments, and appreciate and critique the reasoning of others.

CONTENT STANDARD Math Practice 4: Model with mathematics.

CONTENT STANDARD	Math Practice 5:	Use appropriate tools strategically.
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CONTENT STANDARD	Math Practice 7:	Look for and make use of structure.
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**Wisconsin Academic Standards
Mathematics
Grade 6 - Adopted: 2021**

DOMAIN		Standards for Mathematical Practice
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CONTENT STANDARD	Math Practice 1:	Make sense of problems and persevere in solving them.
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CONTENT STANDARD	Math Practice 2:	Reason abstractly and quantitatively.
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CONTENT STANDARD	Math Practice 3:	Construct viable arguments, and appreciate and critique the reasoning of others.
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CONTENT STANDARD	Math Practice 4:	Model with mathematics.
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CONTENT STANDARD	Math Practice 5:	Use appropriate tools strategically.
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CONTENT STANDARD	Math Practice 7:	Look for and make use of structure.
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DOMAIN		Grade 6 Content Standards
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CONTENT STANDARD	M.6.RP.	Ratios and Proportional Relationships (6.RP)
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PERFORMANCE STANDARD / LEARNING PRIORITY	M.6.RP.A.	Understand ratio concepts and use ratio reasoning to solve problems. (M)
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DESCRIPTOR / FOCUS AREA	M.6.RP.A.3.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number lines, or equations.
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LEARNING CONTINUUM	M.6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
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DOMAIN		Grade 6 Content Standards
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CONTENT STANDARD	M.6.EE.	The Expressions and Equations (6.EE)
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PERFORMANCE STANDARD / LEARNING PRIORITY	M.6.EE.B.	Reason about and solve one-variable equations and inequalities.
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DESCRIPTOR / FOCUS AREA M.6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Wisconsin Academic Standards

Science

Grade 5 - Adopted: 2017

DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.CC.	Crosscutting Concepts (CC)
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PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.CC2.	Students use science and engineering practices, disciplinary core ideas, and cause and effect relationships to make sense of phenomena and solve problems.
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DESCRIPTOR / FOCUS AREA		Cause and Effect
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LEARNING CONTINUUM SCI.CC2.3-5. Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship.

DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
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PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP2.	Students develop and use models, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
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DESCRIPTOR / FOCUS AREA	SCI.SEP2.A.	Developing Models – Students build and revise simple models and use models to represent events and design solutions. This includes the following:
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LEARNING CONTINUUM SCI.SEP2.A.3-5.1. Identify limitations of models.

LEARNING CONTINUUM SCI.SEP2.A.3-5.5. Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.

DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
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PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP3.	Students plan and carry out investigations, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
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DESCRIPTOR / FOCUS AREA	SCI.SEP3.A.	Planning and Conducting Investigations – Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
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LEARNING CONTINUUM SCI.SEP3.A.3-5.2. Evaluate appropriate methods and tools for collecting data.

DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 4.	Students analyze and interpret data, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 4.A.	Analyze and Interpret Data – Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
LEARNING CONTINUUM	SCI.SEP 4.A.3-5.1.	Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
LEARNING CONTINUUM	SCI.SEP 4.A.3-5.2.	Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
LEARNING CONTINUUM	SCI.SEP 4.A.3-5.3.	Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
LEARNING CONTINUUM	SCI.SEP 4.A.3-5.4.	Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
LEARNING CONTINUUM	SCI.SEP 4.A.3-5.5.	Use data to evaluate and refine design solutions.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 5.	Students use mathematics and computational thinking, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 5.A.	Qualitative and Quantitative Data – Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
LEARNING CONTINUUM	SCI.SEP 5.A.3-5.1.	Organize simple data sets to reveal patterns that suggest relationships.
LEARNING CONTINUUM	SCI.SEP 5.A.3-5.2.	Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
LEARNING CONTINUUM	SCI.SEP 5.A.3-5.3.	Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 6.	Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 6.A.	Construct an Explanation – Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:

LEARNING CONTINUUM	SCI.SEP 6.A.3-5.1.	Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
LEARNING CONTINUUM	SCI.SEP 6.A.3-5.2.	Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
LEARNING CONTINUUM	SCI.SEP 6.A.3-5.3.	Identify the evidence that supports particular points in an explanation.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 6.	Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 6.B.	Design Solutions – Students use evidence to create multiple solutions to design problems. This includes the following:

LEARNING CONTINUUM	SCI.SEP 6.B.3-5.1.	Apply scientific ideas to solve design problems.
LEARNING CONTINUUM	SCI.SEP 6.B.3-5.2.	Generate multiple solutions to a problem and compare how well they meet the criteria and constraints.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 8.	Students will obtain, evaluate and communicate information, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 8.A.	Obtain, Evaluate, and Communicate Information – Students evaluate the merit and accuracy of ideas and methods. This includes the following:

LEARNING CONTINUUM	SCI.SEP 8.A.3-5.1.	Read and comprehend grade-appropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
LEARNING CONTINUUM	SCI.SEP 8.A.3-5.5.	Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ESS.	Disciplinary Core Idea: Earth and Space Sciences (ESS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ESS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the Earth and human activity to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ESS 3.C.	Human Impacts on Earth Systems

LEARNING CONTINUUM	SCI.ESS3 .C.5.	Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.
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DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 1.	Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 1.A.	Defining and Delimiting Engineering Problems

LEARNING CONTINUUM SCI.ETS1 .A.3-5. Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 1.	Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 1.B.	Developing Possible Solutions

LEARNING CONTINUUM SCI.ETS1 .B.3-5.1. Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.

LEARNING CONTINUUM SCI.ETS1 .B.3-5.3. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 2.	Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 2.A.	Interdependence of Science, Engineering, and Technology

LEARNING CONTINUUM SCI.ETS2 .A.3-5.1. Science and technology support each other.

LEARNING CONTINUUM SCI.ETS2 .A.3-5.2. Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 2.	Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems.

DESCRIPTOR / FOCUS AREA	SCI.ETS 2.B.	Influence of Engineering, Technology, and Science on Society and the Natural World
LEARNING CONTINUUM	SCI.ETS2 .B.3-5.1.	People's needs and wants change over time, as do their demands for new and improved technologies.
LEARNING CONTINUUM	SCI.ETS2 .B.3-5.2.	Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
LEARNING CONTINUUM	SCI.ETS2 .B.3-5.3.	When new technologies become available, they can bring about changes in the way people live and interact with one another.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.A.	Science and Engineering Are Human Endeavors
LEARNING CONTINUUM	SCI.ETS3 .A.3-5.3.	Science and engineering affect everyday life.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.B.	Science and Engineering Are Unique Ways of Thinking with Different Purposes
LEARNING CONTINUUM	SCI.ETS3 .B.3-5.4.	Engineering solutions often have drawbacks as well as benefits.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.C.	Science and Engineering Use Multiple Approaches to Create New Knowledge and Solve Problems
LEARNING CONTINUUM	SCI.ETS3 .C.3-5.1.	The products of science and engineering are not developed through one set "scientific method" or "engineering design process." Instead, they use a variety of approaches described in the Science and Engineering Practices.
LEARNING CONTINUUM	SCI.ETS3 .C.3-5.3.	There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).

Science
Grade 6 - Adopted: 2017

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.CC.	Crosscutting Concepts (CC)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.CC1.	Students use science and engineering practices, disciplinary core ideas, and patterns to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA		Patterns

LEARNING CONTINUUM SCI.CC1.m. Students recognize macroscopic patterns are related to the nature of microscopic and atomic-level structure. They identify patterns in rates of change and other numerical relationships that provide information about natural and human-designed systems. They use patterns to identify cause and effect relationships and use graphs and charts to identify patterns in data.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.CC.	Crosscutting Concepts (CC)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.CC2.	Students use science and engineering practices, disciplinary core ideas, and cause and effect relationships to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA		Cause and Effect

LEARNING CONTINUUM SCI.CC2.m. Students classify relationships as causal or correlational, and recognize correlation does not necessarily imply causation. They use cause and effect relationships to predict phenomena in natural or designed systems. They also understand that phenomena may have more than one cause, and some cause and effect relationships in systems can only be explained using probability.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 2.	Students develop and use models, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 2.A.	Developing Models – Students develop, use, and revise models to describe, test, and predict more abstract phenomena and design systems. This includes the following:

LEARNING CONTINUUM SCI.SEP2.A.m.1. Evaluate limitations of a model for a proposed object or tool.

LEARNING CONTINUUM SCI.SEP2.A.m.2. Develop or modify a model – based on evidence – to match what happens if a variable or component of a system is changed.

LEARNING CONTINUUM SCI.SEP2.A.m.3. Use and develop a model of simple systems with uncertain and less predictable factors.

LEARNING CONTINUUM SCI.SEP2.A.m.4. Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena.

LEARNING CONTINUUM	SCI.SEP2 .A.m.5.	Develop and use a model to predict and describe phenomena.
LEARNING CONTINUUM	SCI.SEP2 .A.m.6.	Develop a model to describe unobservable mechanisms.
LEARNING CONTINUUM	SCI.SEP2 .A.m.7.	Develop and use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 3.	Students plan and carry out investigations, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 3.A.	Planning and Conducting Investigations – Students plan and carry out investigations that use multiple variables and provide evidence to support explanations or solutions. This includes the following:
LEARNING CONTINUUM	SCI.SEP3 .A.m.2.	Conduct an investigation. Evaluate and revise the experimental design to produce data that serve as the basis for evidence to meet the goals of the investigation.
LEARNING CONTINUUM	SCI.SEP3 .A.m.4.	Collect data under a range of conditions that serve as the basis for evidence to answer scientific questions or test design solutions.
LEARNING CONTINUUM	SCI.SEP3 .A.m.5.	Collect data about the performance of a proposed object, tool, process, or system under a range of conditions.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 4.	Students analyze and interpret data, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 4.A.	Analyze and Interpret Data – Students extend quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. This includes the following:
LEARNING CONTINUUM	SCI.SEP 4.A.m.1.	Construct, analyze, or interpret graphical displays of data and large data sets to identify linear and nonlinear relationships.
LEARNING CONTINUUM	SCI.SEP 4.A.m.2.	Use graphical displays (e.g., maps, charts, graphs, and tables) of large data sets to identify temporal and spatial relationships.
LEARNING CONTINUUM	SCI.SEP 4.A.m.3.	Distinguish between causal and correlational relationships in data.
LEARNING CONTINUUM	SCI.SEP 4.A.m.4.	Analyze and interpret data to provide evidence for explanations of phenomena.
LEARNING CONTINUUM	SCI.SEP 4.A.m.7.	Analyze and interpret data to determine similarities and differences in findings.

LEARNING CONTINUUM	SCI.SEP 4.A.m.8.	Analyze data to define an optimal operational range for a proposed object, tool, process, or system that best meets criteria for success.
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DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
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PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 5.	Students use mathematics and computational thinking, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
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DESCRIPTOR / FOCUS AREA	SCI.SEP 5.A.	Qualitative and Quantitative Data – Students identify patterns in large data sets and use mathematical concepts to support explanations and arguments. This includes the following:
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LEARNING CONTINUUM	SCI.SEP 5.A.m.2.	Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends.
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LEARNING CONTINUUM	SCI.SEP 5.A.m.3.	Use mathematical representations to describe and support scientific conclusions and design solutions.
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LEARNING CONTINUUM	SCI.SEP 5.A.m.4.	Create algorithms (a series of ordered steps) to solve a problem.
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LEARNING CONTINUUM	SCI.SEP 5.A.m.6.	Use digital tools and mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem.
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DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
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PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 6.	Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
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DESCRIPTOR / FOCUS AREA	SCI.SEP 6.A.	Construct an Explanation – Students construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:
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LEARNING CONTINUUM	SCI.SEP 6.A.m.1.	Construct an explanation that includes qualitative or quantitative relationships between variables that predict and describe phenomena.
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LEARNING CONTINUUM	SCI.SEP 6.A.m.2.	Construct an explanation using models or representations.
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LEARNING CONTINUUM	SCI.SEP 6.A.m.3.	Construct a scientific explanation based on valid and reliable evidence obtained from sources, including the students' own experiments. Solutions should build on the following assumption: theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
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LEARNING CONTINUUM	SCI.SEP 6.A.m.4.	Apply scientific ideas, principles, and evidence to construct, revise, or use an explanation for real world phenomena, examples, or events.
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LEARNING CONTINUUM	SCI.SEP 6.A.m.5.	Apply scientific reasoning to show why the data or evidence is adequate for the explanation.
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DOMAIN	WI.SCI.	Science
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CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 6.	Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 6.B.	Design Solutions – Students design solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:
LEARNING CONTINUUM	SCI.SEP 6.B.m.1.	Apply scientific ideas or principles to design, construct, and test a design of an object, tool, process, or system.
LEARNING CONTINUUM	SCI.SEP 6.B.m.2.	Undertake a design project, engaging in the design cycle, to construct and implement a solution that meets specific design criteria and constraints.
LEARNING CONTINUUM	SCI.SEP 6.B.m.3.	Optimize performance of a design by prioritizing criteria, making trade-offs, testing, revising, and retesting.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP 8.	Students will obtain, evaluate and communicate information, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.SEP 8.A.	Obtain, Evaluate, and Communicate Information – Students evaluate the merit and validity of ideas and methods. This includes the following:
LEARNING CONTINUUM	SCI.SEP 8.A.m.1.	Critically read scientific texts adapted for classroom use to determine the central ideas, to obtain scientific and technical information, and to describe patterns in and evidence about the natural and designed world(s).
LEARNING CONTINUUM	SCI.SEP 8.A.m.5.	Communicate scientific and technical information (e.g. about a proposed object, tool, process, or system) in writing and through oral presentations.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ESS.	Disciplinary Core Idea: Earth and Space Sciences (ESS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ESS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the Earth and human activity to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ESS 3.C.	Human Impacts on Earth Systems
LEARNING CONTINUUM	SCI.ESS3 .C.m.	Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 1.	Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.

DESCRIPTOR / FOCUS AREA	SCI.ETS 1.A.	Defining and Delimiting Engineering Problems
LEARNING CONTINUUM	SCI.ETS1 .A.m.	The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 1.	Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 1.B.	Developing Possible Solutions
LEARNING CONTINUUM	SCI.ETS1 .B.m.1.	A solution needs to be tested and then modified on the basis of the test results in order to improve it.
LEARNING CONTINUUM	SCI.ETS1 .B.m.2.	There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
LEARNING CONTINUUM	SCI.ETS1 .B.m.3.	Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
LEARNING CONTINUUM	SCI.ETS1 .B.m.4.	Models of all kinds are important for testing solutions.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 1.	Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 1.C.	Optimizing the Design Solution
LEARNING CONTINUUM	SCI.ETS1 .C.m.2.	The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.
DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 2.	Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 2.A.	Interdependence of Science, Engineering, and Technology
LEARNING CONTINUUM	SCI.ETS2 .A.m.1.	Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems.

LEARNING CONTINUUM	SCI.ETS2 .A.m.2.	Science and technology drive each other forward.
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DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 2.	Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 2.B.	Influence of Engineering, Technology, and Science on Society and the Natural World

LEARNING CONTINUUM	SCI.ETS2 .B.m.1.	All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.
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LEARNING CONTINUUM	SCI.ETS2 .B.m.2.	The uses of technologies are driven by people's needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.
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LEARNING CONTINUUM	SCI.ETS2 .B.m.3.	Technology use varies over time and from region to region.
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DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.A.	Science and Engineering Are Human Endeavors

LEARNING CONTINUUM	SCI.ETS3 .A.m.2.	Scientists and engineers are persistent, use creativity, reasoning, and skepticism, and remain open to new ideas.
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LEARNING CONTINUUM	SCI.ETS3 .A.m.3.	Science and engineering are influenced by what is valued in society.
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DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS .	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.B.	Science and Engineering Are Unique Ways of Thinking with Different Purposes

LEARNING CONTINUUM	SCI.ETS3 .B.m.2.	Engineering seeks solutions to human problems, including issues that arise due to human interaction with the environment. It uses some of the same practices as science and often applies scientific principles to solutions.
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LEARNING CONTINUUM	SCI.ETS3 .B.m.3.	Science and engineering have direct impacts on the quality of life for all people. Therefore, scientists and engineers need to pursue their work in an ethical manner that requires honesty, fairness and dedication to public health, safety and welfare.
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DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ETS 3.C.	Science and Engineering Use Multiple Approaches to Create New Knowledge and Solve Problems

LEARNING CONTINUUM SCI.ETS3.C.m.3. Engineers develop solutions using multiple approaches and evaluate their solutions against criteria such as cost, safety, time and performance. This evaluation often involves trade-offs between constraints to find the optimal solution.

**Wisconsin Academic Standards
Technology Education
Grade 5 - Adopted: 2017**

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP1.	Students will recognize and define computational problems using algorithms and programming.
DESCRIPTOR / FOCUS AREA	CS.AP1.a.	Develop algorithms.

LEARNING CONTINUUM CS.AP1.a.4.i. Construct and execute algorithms (sets of step-by-step instructions), which include sequencing, loops, and conditionals to accomplish a task, both independently and collaboratively, with or without a computing device.

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP2.	Students will create computational artifacts using algorithms and programming.
DESCRIPTOR / FOCUS AREA	CS.AP2.a.	Develop and implement an artifact.

LEARNING CONTINUUM CS.AP2.a.3.i. Construct programs in order to solve a problem or for creative expression, which include sequencing, events, loops, conditionals, parallelism and variables, using a block-based visual programming language or text based language, both independently and collaboratively (e.g., pair programming).

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP3.	Students will communicate about computing ideas.
DESCRIPTOR / FOCUS AREA	CS.AP3.b.	Communicate about technical and social issues.

LEARNING CONTINUUM	CS.AP3.b .2.i.	Understand that algorithms have impacted society in both beneficial and harmful ways.
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LEARNING CONTINUUM	CS.AP3.b .3.i.	Compare different problem solving techniques.
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DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP5.	Students will collaborate with diverse teams.
DESCRIPTOR / FOCUS AREA	CS.AP5. a.	Work together to solve computational problems using a variety of resources.

LEARNING CONTINUUM	CS.AP5. a.4.i.	Understand there are many resources that can be used/tapped to solve a problem.
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DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP6.	Students will test and refine computational solutions.
DESCRIPTOR / FOCUS AREA	CS.AP6. b.	Develop and apply success criteria.

LEARNING CONTINUUM	CS.AP6. b.1.i.	Determine the correctness of a computational problem solution by listening to a classmate describe the solution.
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DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.CS.	Content Area: Computing Systems (CS)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.CS2.	Students will test and refine computing systems.
DESCRIPTOR / FOCUS AREA	CS.CS2. a.	Problem solve and debug.

LEARNING CONTINUUM	CS.CS2. a.2.i.	Identify, using accurate terminology, simple hardware and software problems that may occur during use, and apply strategies for solving problems (e.g., reboot device, check for power, check network availability, close and reopen app).
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.KC.	Content Area: Knowledge Constructor (KC)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.KC2 .	Students produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.
DESCRIPTOR / FOCUS AREA	ITL.KC2. b.	Build knowledge by actively exploring real-world issues and problems.

LEARNING CONTINUUM	ITL.KC2.b 4.i.	Connect learning to age-appropriate real-world issues and problems and begin to develop questions for problem solving.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID1.	Students use a variety of digital tools and resources to identify and solve authentic problems using design thinking.
DESCRIPTOR / FOCUS AREA	ITL.ID1.a.	Find authentic problems in local and global contexts.

LEARNING CONTINUUM	ITL.ID1.a. 2.i.	Identify and describe problems or challenges that affect the community. Analyze all conditions that make it a problem.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID1.	Students use a variety of digital tools and resources to identify and solve authentic problems using design thinking.
DESCRIPTOR / FOCUS AREA	ITL.ID1.b.	Exhibit tolerance for ambiguity, perseverance and the capacity to work with authentic, open-ended problems.

LEARNING CONTINUUM	ITL.ID1.b. 2.i.	Demonstrate perseverance when working with authentic, open-ended problems.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID2.	Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.
DESCRIPTOR / FOCUS AREA	ITL.ID2.a.	Know and use a deliberate design process for generating ideas, testing theories, and creating innovative artifacts and solutions.

LEARNING CONTINUUM	ITL.ID2.a. 2.i.	Explore and practice how a deliberate design process works to generate ideas, considers solutions, plans to solve a problem, and creates innovative products to share with others.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID2.	Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.
DESCRIPTOR / FOCUS AREA	ITL.ID2.c.	Develop, test, and refine prototypes as part of a cyclical design process.

LEARNING CONTINUUM	ITL.ID2.c. 2.i.	Engage in an iterative process to develop and test prototypes and reflect on the role that trial and error plays in the design process.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.CT.	Content Area: Computational Thinker (CT)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.CT1.	Students develop and employ strategies for understanding and solving problems.
DESCRIPTOR / FOCUS AREA	ITL.CT1.a.	Identify, define, and interpret problems where digital tools can assist in finding solutions.
LEARNING CONTINUUM	ITL.CT1.a. 2.i.	Identify problems and select appropriate digital tools to analyze and explore solutions.

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.CT.	Content Area: Computational Thinker (CT)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.CT1.	Students develop and employ strategies for understanding and solving problems.
DESCRIPTOR / FOCUS AREA	ITL.CT1.b.	Collect data, then identify and use digital tools to analyze and represent the data to find solutions.
LEARNING CONTINUUM	ITL.CT1.b. 2.i.	Utilize age-appropriate digital tools to collect data, design, code, test and verify possible solutions collect and represent data to discuss results and share conclusions.

**Wisconsin Academic Standards
Technology Education
Grade 6 - Adopted: 2017**

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP1.	Students will recognize and define computational problems using algorithms and programming.
DESCRIPTOR / FOCUS AREA	CS.AP1.a.	Develop algorithms.
LEARNING CONTINUUM	CS.AP1.a. 6.m.	Decompose a computational problem into parts and create solutions for one or more parts.

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP2.	Students will create computational artifacts using algorithms and programming.
DESCRIPTOR / FOCUS AREA	CS.AP2.a.	Develop and implement an artifact.
LEARNING CONTINUUM	CS.AP2.a. 6.m.	Develop programs, both independently and collaboratively, which include sequencing with nested loops and multiple branches [Clarification: At this level, students may use block-based and/or text-based languages].

LEARNING CONTINUUM	CS.AP2.a .8.m.	Use an iterative design process (e.g., define the problem, generate ideas, build, test, and improve solutions) to solve computational problems, both independently and collaboratively.
DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP3.	Students will communicate about computing ideas.
DESCRIPTOR / FOCUS AREA	CS.AP3. b.	Communicate about technical and social issues.

LEARNING CONTINUUM	CS.AP3.b .5.m.	Discuss how algorithms have impacted society – both the beneficial and harmful effects.
DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP3.	Students will communicate about computing ideas.
DESCRIPTOR / FOCUS AREA	CS.AP3. c.	Document code.

LEARNING CONTINUUM	CS.AP3.c .1.m.	Interpret the flow of execution of algorithms and predict their outcomes. [Clarification: Algorithms can be expressed using natural language, flow and control diagrams, comments within code, and pseudocode.]
DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.DA.	Content Area: Data and Analysis (DA)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.DA1.	Students will create computational artifacts using data and analysis.
DESCRIPTOR / FOCUS AREA	CS.DA1. a.	Represent and manipulate data.

LEARNING CONTINUUM	CS.DA1. a.3.m.	Represent data using different encoding schemes (e.g., binary, Unicode, Morse code, shorthand, student-created codes).
DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.KC.	Content Area: Knowledge Constructor (KC)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.KC1 .	Students critically curate a variety of digital tools and diverse resources.
DESCRIPTOR / FOCUS AREA	ITL.KC1. a.	Plan and employ effective research strategies.

LEARNING CONTINUUM	ITL.KC1.a .9.m.	Demonstrate and practice using an inquiry-based process that involves asking questions, investigating the answers, and developing new understandings for personal or academic learning activities.
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DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.KC.	Content Area: Knowledge Constructor (KC)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.KC2.	Students produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.
DESCRIPTOR / FOCUS AREA	ITL.KC2.b.	Build knowledge by actively exploring real-world issues and problems.
LEARNING CONTINUUM	ITL.KC2.b.5.m.	Demonstrate initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts.
LEARNING CONTINUUM	ITL.KC2.b.6.m.	Explore real-world issues and problems and actively pursue an understanding of them. Begin to develop answers and solutions for problem solving.

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID1.	Students use a variety of digital tools and resources to identify and solve authentic problems using design thinking.
DESCRIPTOR / FOCUS AREA	ITL.ID1.b.	Exhibit tolerance for ambiguity, perseverance and the capacity to work with authentic, open-ended problems.
LEARNING CONTINUUM	ITL.ID1.b.3.m.	Demonstrate an ability to persevere through authentic, open-ended problems by applying abstract concepts with greater ambiguity.

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.ID.	Content Area: Innovative Designer (ID)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.ID2.	Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.
DESCRIPTOR / FOCUS AREA	ITL.ID2.a.	Know and use a deliberate design process for generating ideas, testing theories, and creating innovative artifacts and solutions.
LEARNING CONTINUUM	ITL.ID2.a.3.m.	Use a deliberate design process to generate ideas, create innovative products, and test theories as possible solutions.

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.CT.	Content Area: Computational Thinker (CT)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.CT1.	Students develop and employ strategies for understanding and solving problems.
DESCRIPTOR / FOCUS AREA	ITL.CT1.a.	Identify, define, and interpret problems where digital tools can assist in finding solutions.
LEARNING CONTINUUM	ITL.CT1.a.3.m.	Define and solve an authentic problem using data analysis, modeling, and algorithmic thinking.

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.CT.	Content Area: Computational Thinker (CT)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.CT1.	Students develop and employ strategies for understanding and solving problems.
DESCRIPTOR / FOCUS AREA	ITL.CT1.c.	Break problems into smaller parts, identify key information, and develop descriptive models.
LEARNING CONTINUUM	ITL.CT1.c.3.m.	Separate authentic problems into component parts, identify patterns and differences and develop descriptive models to facilitate problem solving.

Wyoming Content and Performance Standards

Mathematics

Grade 5 - Adopted: 2018

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

Wyoming Content and Performance Standards

Mathematics

Grade 6 - Adopted: 2018

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

CONTENT STANDARD		Ratios and Proportional Relationships
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BENCHMARK	6.RP.A.	Understand ratio concepts and use ratio reasoning to solve problems.
GRADE LEVEL EXAMPLE	6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems.

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

CONTENT STANDARD		Expressions and Equations
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BENCHMARK	6.EE.F.	Reason about and solve one-variable equations and inequalities.
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GRADE LEVEL EXAMPLE 6.EE.F.5. Understand a solution to an equation or an inequality makes the equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

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

CONTENT STANDARD		LIFE SCIENCE
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BENCHMARK	5-LS1.	From Molecules to Organisms: Structure and Processes
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GRADE LEVEL EXAMPLE 5-LS1-1. Support an argument that plants get the materials they need for growth primarily from air and water.

CONTENT STANDARD		EARTH AND SPACE SCIENCE
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BENCHMARK	5-ESS3.	Earth and Human Activity
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GRADE LEVEL EXAMPLE 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to conserve Earth's resources and environment.

CONTENT STANDARD		ENGINEERING DESIGN
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BENCHMARK	3-5-ETS1.	Engineering, Technology, & Applications of Science
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GRADE LEVEL EXAMPLE 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 EXAMPLE 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 EXAMPLE 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.

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

CONTENT STANDARD		PHYSICAL SCIENCE
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BENCHMARK	MS-PS4.	Waves and their Applications in Technologies for Information Transfer
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GRADE LEVEL EXAMPLE	MS-PS4-3.	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.
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CONTENT STANDARD		LIFE SCIENCE
BENCHMARK	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics

GRADE LEVEL EXAMPLE	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
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CONTENT STANDARD		EARTH AND SPACE SCIENCE
BENCHMARK	MS-ESS3.	Earth and Human Activity

GRADE LEVEL EXAMPLE	MS-ESS3-3.	Apply scientific principles to design a method for monitoring, evaluating, and managing a human impact on the environment.
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GRADE LEVEL EXAMPLE	MS-ESS3-4.	Construct an argument supported by evidence for how changes in human population and per-capita consumption of natural resources impact Earth's systems.
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CONTENT STANDARD		ENGINEERING DESIGN
BENCHMARK	MS-ETS1.	Engineering, Technology, and Applications of Science

GRADE LEVEL EXAMPLE	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.
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GRADE LEVEL EXAMPLE	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
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GRADE LEVEL EXAMPLE	MS-ETS1-4.	Develop a model for a proposed object, tool or process and then use an iterative process to test the model, collect data, and generate modification ideas trending toward an optimal design.
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CONTENT STANDARD		ENGINEERING DESIGN
BENCHMARK	MS-ETS2.	Engineering, Technology, Science and Society

GRADE LEVEL EXAMPLE	MS-ETS2-2.	Develop a model defining and prioritizing the impacts of human activity on a particular aspect of the environment, identifying positive and negative consequences of the activity, both short and long-term, and investigate and explain how the ethics and integrity of scientists and engineers and respect for individual property rights might constrain future development.
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Grade 6 - Adopted: 2012

CONTENT STANDARD	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
BENCHMARK		Key Ideas and Details

GRADE LEVEL EXAMPLE	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.
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GRADE LEVEL EXAMPLE	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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CONTENT STANDARD	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
BENCHMARK		Craft and Structure

GRADE LEVEL EXAMPLE	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.
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GRADE LEVEL EXAMPLE	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.
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CONTENT STANDARD	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
BENCHMARK		Integration of Knowledge and Ideas

GRADE LEVEL EXAMPLE	RST.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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GRADE LEVEL EXAMPLE	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.
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CONTENT STANDARD	RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
BENCHMARK		Range of Reading and Level of Text Complexity

GRADE LEVEL EXAMPLE	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.
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CONTENT STANDARD	WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
BENCHMARK		Text Types and Purposes
GRADE LEVEL EXAMPLE	WHST.6-8.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

EXPECTATION	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
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CONTENT STANDARD	WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
BENCHMARK		Production and Distribution of Writing

GRADE LEVEL EXAMPLE	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
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GRADE LEVEL EXAMPLE	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.
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CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	1	Fostering an Inclusive Computing Culture

EXPECTATION	1.1.	"Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products."
EXPECTATION	1.2.	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.
EXPECTATION	1.3.	"Employ self- and peer-advocacy to address bias in interactions, product design, and development methods."

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	3	Recognizing and Defining Computational Problems

EXPECTATION	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
EXPECTATION	3.3.	Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	4	Developing and Using Abstractions

EXPECTATION	4.2.	Evaluate existing technological functionalities and incorporate them into new designs.
EXPECTATION	4.3.	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	5	Creating Computational Artifacts

EXPECTATION	5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
EXPECTATION	5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices

GRADE LEVEL EXAMPLE	6	Testing and Refining Computational Artifact
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EXPECTATION 6.1. Systematically test computational artifacts by considering all scenarios and using test cases.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		3-5 Computer Science Standards
GRADE LEVEL EXAMPLE	AP.A.	Algorithms

EXPECTATION 5.AP.A.0 1. Using grade appropriate content and complexity, compare and refine multiple algorithms for the same task and determine which is the most appropriate.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		3-5 Computer Science Standards
GRADE LEVEL EXAMPLE	AP.M.	Modularity

EXPECTATION 5.AP.M.0 1. Using grade appropriate content and complexity, decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		3-5 Computer Science Standards
GRADE LEVEL EXAMPLE	AP.PD.	Program Development

EXPECTATION 5.AP.PD. 03. Using grade appropriate content and complexity, test and debug (i.e., identify and fix errors) a program or algorithm to ensure it runs as intended.

**Wyoming Content and Performance Standards
Technology Education
Grade 6 - Adopted: 2020**

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	1	Fostering an Inclusive Computing Culture

EXPECTATION 1.1. "Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products."

EXPECTATION 1.2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

EXPECTATION 1.3. "Employ self- and peer-advocacy to address bias in interactions, product design, and development methods."

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices

GRADE LEVEL EXAMPLE	3	Recognizing and Defining Computational Problems
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EXPECTATION 3.2. Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

EXPECTATION 3.3. Evaluate whether it is appropriate and feasible to solve a problem computationally.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	4	Developing and Using Abstractions

EXPECTATION 4.2. Evaluate existing technological functionalities and incorporate them into new designs.

EXPECTATION 4.3. Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	5	Creating Computational Artifacts

EXPECTATION 5.1. Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

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

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		Computer Science Practices
GRADE LEVEL EXAMPLE	6	Testing and Refining Computational Artifact

EXPECTATION 6.1. Systematically test computational artifacts by considering all scenarios and using test cases.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		MS Computer Science Standards
GRADE LEVEL EXAMPLE	CS.HS.	Hardware & Software

EXPECTATION 8.CS.HS.01. Design and refine a project that combines hardware and software components to collect and exchange data.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		MS Computer Science Standards
GRADE LEVEL EXAMPLE	AP.A.	Algorithms

EXPECTATION 8.AP.A.0 Create flowcharts and pseudocode to design algorithms to solve complex problems.
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CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		MS Computer Science Standards
GRADE LEVEL EXAMPLE	IC.SI.	Social Interactions

EXPECTATION 8.IC.SI.01 Using grade appropriate content and complexity, collaborate using tools to connect with peers when creating a computational artifact.
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