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: 7, 8, Key Stage 3

Forward Education

Wildfire detection with Autonomous Vehicles

Pennsylvania Core and Academic Standards

Mathematics

Grade **7** - Adopted: **2014**

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

Pennsylvania Core and Academic Standards

Mathematics

Grade **8** - Adopted: **2014**

SUBJECT / STANDARD AREA	PA.CC.MP.	Standards for Mathematical Practice
STANDARD AREA / STATEMENT	CC.MP.1.	Make sense of problems and persevere in solving them.

STANDARD AREA / STATEMENT	CC.MP.2.	Reason abstractly and quantitatively.
STANDARD AREA / STATEMENT	CC.MP.3.	Construct viable arguments and critique the reasoning of others.
STANDARD AREA / STATEMENT	CC.MP.4.	Model with mathematics.
STANDARD AREA / STATEMENT	CC.MP.6.	Attend to precision.
STANDARD AREA / STATEMENT	CC.MP.7.	Look for and make use of structure.
STANDARD AREA / STATEMENT	CC.MP.8.	Look for and express regularity in repeated reasoning.
SUBJECT / STANDARD AREA	**PA.CC.2.2.8.**	**Algebraic Concepts**
STANDARD AREA / STATEMENT	**CC.2.2.8.B.**	**Expressions and Equations**
STANDARD	CC.2.2.8.B.2.	Understand the connections between proportional relationships, lines, and linear equations.
STANDARD	CC.2.2.8.B.3.	Analyze and solve linear equations and pairs of simultaneous linear equations.

Pennsylvania Core and Academic Standards

Science

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

SUBJECT / STANDARD AREA	**PA.SI.**	**Science as Inquiry**
STANDARD AREA / STATEMENT	SI.5.	Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.
STANDARD AREA / STATEMENT	SI.6.	Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**

STANDARD AREA / STATEMENT	**3.2.**	**Physical Sciences: Chemistry and Physics**
STANDARD	**3.2.B.**	**Physics**
DESCRIPTOR / STANDARD	3.2.7.B3a.	Differentiate among convection, conduction, and radiation.
DESCRIPTOR / STANDARD	3.2.7.B6b.	(ENERGY) Demonstrate how the transfer of heat energy causes temperature changes.
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	3.4.7.A2.	Explain how different technologies involve different sets of processes.
DESCRIPTOR / STANDARD	3.4.7.A3.	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.4.**	**Technology and Engineering Education**
STANDARD	**3.4.B.**	**Technology and Society**
DESCRIPTOR / STANDARD	3.4.7.B1.	Explain how the use of technology can have consequences that affect humans in many ways.
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	3.4.7.C1.	Describe how design, as a creative planning process, leads to useful products and systems.
DESCRIPTOR / STANDARD	3.4.7.C2.	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
DESCRIPTOR / STANDARD	3.4.7.C3.	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.

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	3.4.7.D1.	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
DESCRIPTOR / STANDARD	3.4.7.D2.	Select and safely use appropriate tools, products and systems for specific tasks.
DESCRIPTOR / STANDARD	3.4.7.D3.	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.1.**	**Ecology**
STANDARD	**4.1.7.E.**	**Identify factors that contribute to change in natural and human-made systems.**
DESCRIPTOR / STANDARD	4.1.7.E.1.	Explain the processes of primary and secondary succession in a given ecosystem.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.3.**	**Natural Resources**
STANDARD	**4.3.7.B.**	**Explain the distribution and management of natural resources.**
DESCRIPTOR / STANDARD	4.3.7.B.1.	conservation, preservation, and exploitation.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.5.**	**Humans and the Environment**
STANDARD	**4.5.7.A.**	**Describe how the development of civilization affects the use of natural resources.**
DESCRIPTOR / STANDARD	4.5.7.A.1.	Compare and contrast how people use natural resources in sustainable and nonsustainable ways throughout the world.

Grade **7** - Adopted: **2014**

SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**

STANDARD AREA / STATEMENT		**Key Ideas and Details**
STANDARD	CC.3.5.6-8.B.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
STANDARD	CC.3.5.6-8.C.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Craft and Structure**
STANDARD	CC.3.5.6-8.D.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
STANDARD	CC.3.5.6-8.E.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Integration of Knowledge and Ideas**
STANDARD	CC.3.5.6-8.I.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Range and Level of Complex Texts**
STANDARD	CC.3.5.6-8.J.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**
STANDARD AREA / STATEMENT		**Text Types and Purposes**
STANDARD	**CC.3.6.6-8.B.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
DESCRIPTOR / STANDARD	CC.3.6.6-8.B.4.	Use precise language and domain-specific vocabulary to inform about or explain the topic.
SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**

STANDARD AREA / STATEMENT		**Production and Distribution of Writing**
STANDARD	CC.3.6.6-8.C.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD	CC.3.6.6-8.E.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Pennsylvania Core and Academic Standards

Science

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

SUBJECT / STANDARD AREA	**PA.SI.**	**Science as Inquiry**
STANDARD AREA / STATEMENT	SI.4.	Formulate and revise explanations and models using logic and evidence.
STANDARD AREA / STATEMENT	SI.5.	Recognize and analyze alternative explanations and models.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.2.**	**Physical Sciences: Chemistry and Physics**
STANDARD	**3.2.B.**	**Physics**
DESCRIPTOR / STANDARD	3.2.8.B4.	Compare and contrast atomic properties of conductors and insulators.

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	3.4.8.B4.	Explain how societal and cultural priorities and values are reflected in technological devices.

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	3.4.8.C1.	Evaluate the criteria and constraints of a design.
DESCRIPTOR / STANDARD	3.4.8.C3.	Analyze how a multidisciplinary (STEM) approach to problem solving will yield greater results.
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	3.4.8.D1.	Test and evaluate the solutions for a design problem.
DESCRIPTOR / STANDARD	3.4.8.D2.	Operate and maintain systems in order to achieve a given purpose.
DESCRIPTOR / STANDARD	3.4.8.D3.	Interpret and evaluate the accuracy of the information obtained and determine its usefulness.

Grade **8** - Adopted: **2014**

SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Key Ideas and Details**
STANDARD	CC.3.5.6-8.B.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
STANDARD	CC.3.5.6-8.C.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Craft and Structure**
STANDARD	CC.3.5.6-8.D.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
STANDARD	CC.3.5.6-8.E.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Integration of Knowledge and Ideas**

STANDARD	CC.3.5.6-8.I.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

SUBJECT / STANDARD AREA	**PA.CC.3.5.6-8.**	**Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.**
STANDARD AREA / STATEMENT		**Range and Level of Complex Texts**

STANDARD	CC.3.5.6-8.J.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**
STANDARD AREA / STATEMENT		**Text Types and Purposes**
STANDARD	**CC.3.6.6-8.B.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**

DESCRIPTOR / STANDARD	CC.3.6.6-8.B.4.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

SUBJECT / STANDARD AREA	**PA.CC.3.6.6-8.**	**Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**
STANDARD AREA / STATEMENT		**Production and Distribution of Writing**

STANDARD	CC.3.6.6-8.C.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

STANDARD	CC.3.6.6-8.E.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Pennsylvania Core and Academic Standards

Technology Education

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-DA.**	**Data & Analysis**
STANDARD		**Inference & Models**

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Control**
DESCRIPTOR / STANDARD	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P5.1, P5.2)

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Program Development**
DESCRIPTOR / STANDARD	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P2.2)

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**

STANDARD AREA / STATEMENT	**2-IC.**	**Impacts of Computing**
STANDARD		**Safety, Law, & Ethics**
DESCRIPTOR / STANDARD	2-IC-23.	Describe tradeoffs between allowing information to be public and keeping information private and secure. (P7.2)

Pennsylvania Core and Academic Standards

Technology Education

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

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-DA.**	**Data & Analysis**
STANDARD		**Inference & Models**
DESCRIPTOR / STANDARD	2-DA-09.	Refine computational models based on the data they have generated. (P5.3, P4.4)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Variables**
DESCRIPTOR / STANDARD	2-AP-11.	Create clearly named variables that represent different data types and perform operations on their values. (P5.1, P5.2)

SUBJECT / STANDARD AREA	**CSTA.2.**	**Level 2 (Ages 11-14)**
STANDARD AREA / STATEMENT	**2-AP.**	**Algorithms & Programming**
STANDARD		**Control**
DESCRIPTOR / STANDARD	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P5.1, P5.2)

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

SUBJECT / STANDARD AREA	CSTA.2.	Level 2 (Ages 11-14)
STANDARD AREA / STATEMENT	2-AP.	Algorithms & Programming
STANDARD		Program Development
DESCRIPTOR / STANDARD	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P2.2)

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

SUBJECT / STANDARD AREA	CSTA.2.	Level 2 (Ages 11-14)
STANDARD AREA / STATEMENT	2-IC.	Impacts of Computing
STANDARD		Safety, Law, & Ethics
DESCRIPTOR / STANDARD	2-IC-23.	Describe tradeoffs between allowing information to be public and keeping information private and secure. (P7.2)

Rhode Island World-Class Standards

Mathematics

Grade **7** - Adopted: **2021**

DOMAIN		The Standards for Mathematical Practice
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	MP6	Attend to precision.
STATEMENT OF ENDURING KNOWLEDGE	MP7	Look for and make use of structure.
STATEMENT OF ENDURING KNOWLEDGE	MP8	Look for and express regularity in repeated reasoning.

DOMAIN		Grade 7 Content Standards
STATEMENT OF ENDURING KNOWLEDGE	**7.EE.**	**Expressions and Equations**
GSE STEM	**7.EE.B.**	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
SPECIFIC INDICATOR	**7.EE.B.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
INDICATOR	7.EE.B.4.a.	Solve word problems leading to equations of the form px + q = r and p(x ÷ q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

Rhode Island World-Class Standards

Mathematics

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

DOMAIN		The Standards for Mathematical Practice
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	MP6	Attend to precision.
STATEMENT OF ENDURING KNOWLEDGE	MP7	Look for and make use of structure.

STATEMENT OF ENDURING KNOWLEDGE	MP8	Look for and express regularity in repeated reasoning.

DOMAIN		Grade 8 Content Standards
STATEMENT OF ENDURING KNOWLEDGE	8.EE.	Expressions and Equations
GSE STEM	8.EE.B.	Understand the connections between proportional relationships, lines, and linear equations.
SPECIFIC INDICATOR	8.EE.B.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Rhode Island World-Class Standards

Science

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

DOMAIN	NGSS.MS-PS.	PHYSICAL SCIENCE
STATEMENT OF ENDURING KNOWLEDGE	MS-PS3.	Energy
GSE STEM		Students who demonstrate understanding can:
SPECIFIC INDICATOR	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

DOMAIN	NGSS.MS-LS.	LIFE SCIENCE
STATEMENT OF ENDURING KNOWLEDGE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
GSE STEM		Students who demonstrate understanding can:
SPECIFIC INDICATOR	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.	Earth's Systems
GSE STEM		Students who demonstrate understanding can:
SPECIFIC INDICATOR	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

DOMAIN	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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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 **7** - 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.
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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

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.

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.

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.
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.

Rhode Island World-Class Standards

Science

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

DOMAIN	**NGSS.MS-PS.**	**PHYSICAL SCIENCE**
STATEMENT OF ENDURING KNOWLEDGE	**MS-PS3.**	**Energy**
GSE STEM		**Students who demonstrate understanding can:**
SPECIFIC INDICATOR	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

DOMAIN	**NGSS.MS-LS.**	**LIFE SCIENCE**

STATEMENT OF ENDURING KNOWLEDGE	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GSE STEM		**Students who demonstrate understanding can:**
SPECIFIC INDICATOR	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.**	**Earth's Systems**
GSE STEM		**Students who demonstrate understanding can:**
SPECIFIC INDICATOR	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
DOMAIN	**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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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.

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.
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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

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.

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.

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.
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.

Rhode Island World-Class Standards

Technology Education

Grade **7** - Adopted: **2016**

DOMAIN		ISTE Standards for Students
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.**
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.

DOMAIN		ISTE Standards for Students
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.**
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.
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.
GSE STEM	ISTE-S.4.c.	Develop, test and refine prototypes as part of a cyclical design process.

DOMAIN		ISTE Standards for Students
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.6.**	**Creative Communicators: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
GSE STEM	ISTE-S.6.c.	Communication complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

DOMAIN		ISTE Standards for Students
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.7.**	**Global Collaborators: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
GSE STEM	ISTE-S.7.b.	Use collaborative technologies to work with others, including peers, experts, or community members to examine issues and problems from multiple viewpoints.
GSE STEM	ISTE-S.7.d.	Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

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

DOMAIN		Computer Science

STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-V.**	**Variables**
SPECIFIC INDICATOR	2-CT-V-1.	Create clearly named variables that represent different data. Perform operations on data stored in variables.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-C.**	**Control Structures**
SPECIFIC INDICATOR	2-CT-C-1.	Design programs that combine control structures, including nested loops and compound conditionals.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-CD.**	**Computational Design**
SPECIFIC INDICATOR	2-CT-CD-3.	Describe choices made during development of computational artifacts.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-DA.**	**Data & Analysis**
GSE STEM	**2-DA-IM.**	**Inferences and Models**
SPECIFIC INDICATOR	2-DA-IM-1.	Create and refine computational models based on generated or gathered data.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-DL.**	**Digital Literacy**
GSE STEM	**2-DL-CU.**	**Creation and Use**
SPECIFIC INDICATOR	2-DL-CU-1.	Use software tools to create artifacts that engage users over time

Rhode Island World-Class Standards

Technology Education

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

DOMAIN		**ISTE Standards for Students**
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.**

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.

DOMAIN		ISTE Standards for Students
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.**
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.
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.
GSE STEM	ISTE-S.4.c.	Develop, test and refine prototypes as part of a cyclical design process.

DOMAIN		ISTE Standards for Students
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.6.**	**Creative Communicators: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**
GSE STEM	ISTE-S.6.c.	Communication complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

DOMAIN		ISTE Standards for Students
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.7.**	**Global Collaborators: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
GSE STEM	ISTE-S.7.b.	Use collaborative technologies to work with others, including peers, experts, or community members to examine issues and problems from multiple viewpoints.
GSE STEM	ISTE-S.7.d.	Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

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

DOMAIN		Computer Science
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-V.**	**Variables**
SPECIFIC INDICATOR	2-CT-V-1.	Create clearly named variables that represent different data. Perform operations on data stored in variables.

DOMAIN		Computer Science
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-C.**	**Control Structures**

SPECIFIC INDICATOR	2-CT-C-1.	Design programs that combine control structures, including nested loops and compound conditionals.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-CD.**	**Computational Design**

SPECIFIC INDICATOR	2-CT-CD-3.	Describe choices made during development of computational artifacts.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-DA.**	**Data & Analysis**
GSE STEM	**2-DA-IM.**	**Inferences and Models**

SPECIFIC INDICATOR	2-DA-IM-1.	Create and refine computational models based on generated or gathered data.

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-DL.**	**Digital Literacy**
GSE STEM	**2-DL-CU.**	**Creation and Use**

SPECIFIC INDICATOR	2-DL-CU-1.	Use software tools to create artifacts that engage users over time

South Carolina Standards & Learning

Mathematics

Grade **7** - 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.6.**	**Communicate mathematically and approach mathematical situations with precision.**

PERFORMANCE DESCRIPTOR / STANDARD	PS.6a.	Express numerical answers with the degree of precision appropriate for the context of a situation.
PERFORMANCE DESCRIPTOR / STANDARD	PS.6b.	Represent numbers in an appropriate form according to the context of the situation.
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.7b.	Recognize mathematical repetition in order to make generalizations.
PERFORMANCE DESCRIPTOR / STANDARD	PS.7c.	Look for structures to interpret meaning and develop solution strategies.
STANDARD / COURSE	**SC.7.EEI.**	**Expressions, Equations, and Inequalities**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**7.EEI.4.**	**Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations.**
PERFORMANCE DESCRIPTOR / STANDARD	7.EEI.4d.	Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities.

South Carolina Standards & Learning

Mathematics

Grade **8** - 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.6.**	**Communicate mathematically and approach mathematical situations with precision.**
PERFORMANCE DESCRIPTOR / STANDARD	PS.6a.	Express numerical answers with the degree of precision appropriate for the context of a situation.
PERFORMANCE DESCRIPTOR / STANDARD	PS.6b.	Represent numbers in an appropriate form according to the context of the situation.
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.7b.	Recognize mathematical repetition in order to make generalizations.
PERFORMANCE DESCRIPTOR / STANDARD	PS.7c.	Look for structures to interpret meaning and develop solution strategies.
STANDARD / COURSE	**SC.8.EEI.**	**Expressions, Equations, and Inequalities**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**8.EEI.5.**	**Apply concepts of proportional relationships to real-world and mathematical situations.**
PERFORMANCE DESCRIPTOR / STANDARD	8.EEI.5a.	Graph proportional relationships.
STANDARD / COURSE	**SC.8.EEI.**	**Expressions, Equations, and Inequalities**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**8.EEI.7.**	**Extend concepts of linear equations and inequalities in one variable to more complex multi-step equations and inequalities in real-world and mathematical situations.**
PERFORMANCE DESCRIPTOR / STANDARD	8.EEI.7a.	Solve linear equations and inequalities with rational number coefficients that include the use of the distributive property, combining like terms, and variables on both sides.
PERFORMANCE DESCRIPTOR / STANDARD	8.EEI.7b.	Recognize the three types of solutions to linear equations: one solution (x=a), infinitely many solutions (a=a), or no solutions (a=b).

PERFORMANCE DESCRIPTOR / STANDARD	8.EEI.7d.	Justify why linear equations have a specific type of solution.

South Carolina Standards & Learning

Science

Grade **7** - Adopted: **2021**

STANDARD / COURSE		**Life Science (LS)**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**Ecosystems: Interactions, Energy, and Dynamics (LS2)**
PERFORMANCE DESCRIPTOR / STANDARD	7-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
PERFORMANCE DESCRIPTOR / STANDARD	7-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STANDARD / COURSE		**Earth and Space Science (ESS)**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**Earth and Human Activity (ESS3)**
PERFORMANCE DESCRIPTOR / STANDARD	7-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
PERFORMANCE DESCRIPTOR / STANDARD	7-ESS3-5.	Ask questions to clarify evidence of the factors that have impacted global temperatures over the past century.

South Carolina Standards & Learning

Technology Education

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

STANDARD / COURSE		**Process Standards**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**1**	**Foster an inclusive computing culture.**
GRADE LEVEL EXAMPLE / STAGE	1.b.	Consider others' perspectives as well as one's own perspective when developing computational solutions.
STANDARD / COURSE		**Process Standards**

KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**4**	**Create, test, and refine computational artifacts.**
GRADE LEVEL EXAMPLE / STAGE	4.c.	Test computational artifacts systematically by considering multiple scenarios and using test cases.
STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 3.**	**Decompose problems into subproblems and write code to solve the subproblems (i.e., break down a problem into smaller parts).**
PERFORMANCE DESCRIPTOR / STANDARD	7.AP.3.2.	Identify the parts of a program (e.g., components of creating a video game include keeping score, determining winners/losers, moving characters, designing game art, and advancing level).
STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 4.**	**Design and code programs to solve problems.**
PERFORMANCE DESCRIPTOR / STANDARD	7.AP.4.1.	Use a beginner coding language (e.g., drag-and-drop, block-based) to design and code a moderately complex program that solves a problem.
STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 5.**	**Identify variables and compare the types of data stored as variables.**
PERFORMANCE DESCRIPTOR / STANDARD	7.AP.5.1.	Identify variables as a representation for information.
STANDARD / COURSE		**Impact of Computing**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 1.**	**Evaluate the tradeoffs of computing in everyday activities.**
PERFORMANCE DESCRIPTOR / STANDARD	7.IC.1.2.	Compare positive and negative impacts of computing on society (e.g., personal, health, workforce, economy, education, culture, environment).

STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANCE DESCRIPTOR / STANDARD	1	Foster an inclusive computing culture.
GRADE LEVEL EXAMPLE / STAGE	1.b.	Consider others' perspectives as well as one's own perspective when developing computational solutions.

STANDARD / COURSE		Process Standards
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		A computer science literate student can:
PERFORMANCE DESCRIPTOR / STANDARD	4	Create, test, and refine computational artifacts.
GRADE LEVEL EXAMPLE / STAGE	4.c.	Test computational artifacts systematically by considering multiple scenarios and using test cases.

STANDARD / COURSE		Data and Analysis
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 3.	Analyze various ways to visually represent data.
PERFORMANCE DESCRIPTOR / STANDARD	8.DA.3.3.	Explain how models are used to predict specific behaviors and/or outcomes (e.g., weather data presented in a model used to predict future weather conditions and activity).

STANDARD / COURSE		Algorithms and Programming
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 2.	Use and compare simple coding control structures (e.g., if-then, loops).
PERFORMANCE DESCRIPTOR / STANDARD	8.AP.2.1.	Modify an algorithm using conditionals and iteration.

STANDARD / COURSE		Algorithms and Programming
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	Standard 3.	Decompose problems into subproblems and write code to solve the subproblems (i.e., break down a problem into smaller parts).

PERFORMANCE DESCRIPTOR / STANDARD	8.AP.3.2.	Compose a program with multiple parts.

STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 4.**	**Design and code programs to solve problems.**
PERFORMANCE DESCRIPTOR / STANDARD	8.AP.4.1.	Use a beginner coding language (e.g., drag-and-drop, block-based) to design and code a complex program that solves a problem.

STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 5.**	**Identify variables and compare the types of data stored as variables.**
PERFORMANCE DESCRIPTOR / STANDARD	8.AP.5.1.	Compare and contrast variables that change or are constant.
PERFORMANCE DESCRIPTOR / STANDARD	8.AP.5.2.	Identify the variables needed to solve a given problem (i.e., information that needs to be tracked).

STANDARD / COURSE		**Impact of Computing**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 1.**	**Evaluate the tradeoffs of computing in everyday activities.**
PERFORMANCE DESCRIPTOR / STANDARD	8.IC.1.2.	Analyze positive and negative impacts of computing on society (e.g., personal, health, workforce, economy, education, culture, environment).

South Dakota Content Standards

Mathematics

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

GOAL/STRAND		**Standards for Mathematical Practice**
INDICATOR/BENCHMARK	1	Make sense of problems and persevere in solving them.
INDICATOR/BENCHMARK	2	Reason abstractly and quantitatively.
INDICATOR/BENCHMARK	3	Construct viable arguments and critique the reasoning of others.

INDICATOR/BENCHMARK	4	Model with mathematics.
INDICATOR/BENCHMARK	6	Attend to precision.
INDICATOR/BENCHMARK	7	Look for and make use of structure.
INDICATOR/BENCHMARK	8	Look for and express regularity in repeated reasoning.
GOAL/STRAND	**7.EE.**	**Expressions and Equations**
INDICATOR/BENCHMARK	**7.EE.A.**	**Use properties of operations to generate equivalent expressions.**
STANDARD	**7.EE.A.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
SUPPORTING SKILLS	7.EE.A.4.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

South Dakota Content Standards

Mathematics

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

GOAL/STRAND		**Standards for Mathematical Practice**
INDICATOR/BENCHMARK	1	Make sense of problems and persevere in solving them.
INDICATOR/BENCHMARK	2	Reason abstractly and quantitatively.
INDICATOR/BENCHMARK	3	Construct viable arguments and critique the reasoning of others.
INDICATOR/BENCHMARK	4	Model with mathematics.
INDICATOR/BENCHMARK	6	Attend to precision.
INDICATOR/BENCHMARK	7	Look for and make use of structure.
INDICATOR/BENCHMARK	8	Look for and express regularity in repeated reasoning.
GOAL/STRAND	**8.EE.**	**Expressions and Equations**
INDICATOR/BENCHMARK	**8.EE.B.**	**Understand the connections between proportional relationships, lines and linear equations.**

STANDARD	8.EE.B.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

South Dakota Content Standards

Science

Grade **7** - Adopted: **2015**

GOAL/STRAND	**SD.6-8.PSS.**	**Middle School Physical Science Standards**
INDICATOR/BENCHMARK	MS-PS3-3.	Design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (SEP: 6; DCI: PS3.A, PS3.B, ETS1.A, ETS1.B, ; CCC: Energy/Matter)
INDICATOR/BENCHMARK	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**
INDICATOR/BENCHMARK	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (SEP: 7; DCI: LS2.C ; CCC: Stability/Change)
INDICATOR/BENCHMARK	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**
INDICATOR/BENCHMARK	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (SEP: 6; DCI: ESS2.A, ESS2.C; CCC: Scale/Prop.)
INDICATOR/BENCHMARK	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (SEP: 4; DCI: ESS3.B; CCC: Patterns, Technology)
INDICATOR/BENCHMARK	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/BENCHMARK	MS-ESS3-5.	Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century. (SEP: 1; DCI: ESS3.D; CCC: Stability/Change)

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

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.6-8.9.	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.
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.
GOAL/STRAND	**SD.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
INDICATOR/BENCHMARK		**Production and Distribution of Writing**
STANDARD	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

South Dakota Content Standards

Science

Grade **8** - Adopted: **2015**

GOAL/STRAND	**SD.6-8.PSS.**	**Middle School Physical Science Standards**
INDICATOR/BENCHMARK	MS-PS3-3.	Design, construct, and test a device that either minimizes or maximizes thermal energy transfer. (SEP: 6; DCI: PS3.A, PS3.B, ETS1.A, ETS1.B, ; CCC: Energy/Matter)

INDICATOR/BENCHMARK	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**
INDICATOR/BENCHMARK	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (SEP: 7; DCI: LS2.C ; CCC: Stability/Change)
INDICATOR/BENCHMARK	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**
INDICATOR/BENCHMARK	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (SEP: 6; DCI: ESS2.A, ESS2.C; CCC: Scale/Prop.)
INDICATOR/BENCHMARK	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (SEP: 4; DCI: ESS3.B; CCC: Patterns, Technology)
INDICATOR/BENCHMARK	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/BENCHMARK	MS-ESS3-5.	Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century. (SEP: 1; DCI: ESS3.D; CCC: Stability/Change)

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

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.6-8.9.	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.
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.
GOAL/STRAND	**SD.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
INDICATOR/BENCHMARK		**Production and Distribution of Writing**
STANDARD	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Tennessee Academic Standards

Mathematics

Grade **7** - Adopted: **2021**

STRAND / STANDARD / COURSE		**Standards for Mathematical Practice**
CONCEPTUAL STRAND / GUIDING QUESTION	1	Make sense of problems and persevere in solving them.
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	6	Attend to precision.
CONCEPTUAL STRAND / GUIDING QUESTION	7	Look for and make use of structure.
CONCEPTUAL STRAND / GUIDING QUESTION	8	Look for and express regularity in repeated reasoning.

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

Tennessee Academic Standards

Mathematics

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

STRAND / STANDARD / COURSE		**Standards for Mathematical Practice**
CONCEPTUAL STRAND / GUIDING QUESTION	1	Make sense of problems and persevere in solving them.
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	6	Attend to precision.
CONCEPTUAL STRAND / GUIDING QUESTION	7	Look for and make use of structure.
CONCEPTUAL STRAND / GUIDING QUESTION	8	Look for and express regularity in repeated reasoning.

STRAND / STANDARD / COURSE		**Mathematics | Grade 8**
CONCEPTUAL STRAND / GUIDING QUESTION	**8.EE.**	**Expressions and Equations(EE)**
GUIDING QUESTION / LEARNING EXPECTATION	**8.EE.B.**	**Understand the connections between proportional relationships, lines, and linear equations.**
LEARNING EXPECTATION	8.EE.B.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Tennessee Academic Standards

Science

Grade **7** - Adopted: **2016**

STRAND / STANDARD / COURSE	**TN.7.ESS.**	**Earth and Space Sciences (ESS)**
CONCEPTUAL STRAND / GUIDING QUESTION	**7.ESS3.**	**Earth and Human Activity**
GUIDING QUESTION / LEARNING EXPECTATION	7.ESS3.1.	Graphically represent the composition of the atmosphere as a mixture of gases and discuss the potential for atmospheric change.

Tennessee Academic Standards

Science

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

STRAND / STANDARD / COURSE	**TN.8.ESS.**	**Earth and Space Sciences (ESS)**
CONCEPTUAL STRAND / GUIDING QUESTION	**8.ESS2.**	**Earth's Systems**
GUIDING QUESTION / LEARNING EXPECTATION	8.ESS2.1.	Analyze and interpret data to support the assertion that rapid or gradual geographic changes lead to drastic population changes and extinction events.

Tennessee Academic Standards

Technology Education

Grade **7** - 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.

STRAND / STANDARD / COURSE		**Tennessee K-12 Computer Science State Standards**
CONCEPTUAL STRAND / GUIDING QUESTION		**Middle School: Computer Science Standards**
GUIDING QUESTION / LEARNING EXPECTATION	**MS.DA.**	**Data Analysis**
LEARNING EXPECTATION	MS.DA.2.	Refine computational models based on the data they have generated.

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.2.	Create procedures with parameters that hide the complexity of a task and can be reused to solve similar tasks.
LEARNING EXPECTATION	MS.PC.7.	Design a function using a programming language.

Tennessee Academic Standards

Technology Education

Grade **8** - 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.

STRAND / STANDARD / COURSE		**Tennessee K-12 Computer Science State Standards**
CONCEPTUAL STRAND / GUIDING QUESTION		**Middle School: Computer Science Standards**
GUIDING QUESTION / LEARNING EXPECTATION	**MS.DA.**	**Data Analysis**
LEARNING EXPECTATION	MS.DA.2.	Refine computational models based on the data they have generated.

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.2.	Create procedures with parameters that hide the complexity of a task and can be reused to solve similar tasks.
LEARNING EXPECTATION	MS.PC.7.	Design a function using a programming language.

Utah Core Standards

Mathematics

Grade **7** - Adopted: **2016**

STANDARD / AREA OF LEARNING	UT.7.MP.	MATHEMATICAL PRACTICES (7.MP)
OBJECTIVE / STRAND	7.MP.1.	Make sense of problems and persevere in solving them. Explain the meaning of a problem and look for entry points to its solution. Analyze givens, constraints, relationships, and goals. Make conjectures about the form and meaning of the solution, plan a solution pathway, and continually monitor progress asking, “Does this make sense?” Consider analogous problems, make connections between multiple representations, identify the correspondence between different approaches, look for trends, and transform algebraic expressions to highlight meaningful mathematics. Check answers to problems using a different method.
OBJECTIVE / STRAND	7.MP.2.	Reason abstractly and quantitatively. Make sense of the quantities and their relationships in problem situations. Translate between context and algebraic representations by contextualizing and decontextualizing quantitative relationships. This includes the ability to decontextualize a given situation, representing it algebraically and manipulating symbols fluently as well as the ability to contextualize algebraic representations to make sense of the problem.
OBJECTIVE / STRAND	7.MP.3.	Construct viable arguments and critique the reasoning of others. Understand and use stated assumptions, definitions, and previously established results in constructing arguments. Make conjectures and build a logical progression of statements to explore the truth of their conjectures. Justify conclusions and communicate them to others. Respond to the arguments of others by listening, asking clarifying questions, and critiquing the reasoning of others.
OBJECTIVE / STRAND	7.MP.4.	Model with mathematics. Apply mathematics to solve problems arising in everyday life, society, and the workplace. Make assumptions and approximations, identifying important quantities to construct a mathematical model. Routinely interpret mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.
OBJECTIVE / STRAND	7.MP.6.	Attend to precision. Communicate precisely to others. Use explicit definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose. Specify units of measure and label axes to clarify the correspondence with quantities in a problem. Calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context.
OBJECTIVE / STRAND	7.MP.7.	Look for and make use of structure. Look closely at mathematical relationships to identify the underlying structure by recognizing a simple structure within a more complicated structure. See complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, see 5 – 3(x – y)^2 as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.
OBJECTIVE / STRAND	7.MP.8.	Look for and express regularity in repeated reasoning. Notice if reasoning is repeated, and look for both generalizations and shortcuts. Evaluate the reasonableness of intermediate results by maintaining oversight of the process while attending to the details.

STANDARD / AREA OF LEARNING	**UT.7.EE.**	**EXPRESSIONS AND EQUATIONS (7.EE)**
OBJECTIVE / STRAND		**Use properties of operations to generate equivalent expressions (Standards 7.EE.1–2). Solve real-life and mathematical problems using numerical and algebraic expressions and equations (Standards 7.EE.3–4).**
INDICATOR / CLUSTER	**7.EE.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
EXPECTATION / STANDARD	7.EE.4.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Utah Core Standards

Mathematics

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

STANDARD / AREA OF LEARNING	**UT.8.MP.**	**MATHEMATICAL PRACTICES (8.MP)**
OBJECTIVE / STRAND		**The Standards for Mathematical Practice in Eighth Grade describe mathematical habits of mind that teachers should seek to develop in their students. Students become mathematically proficient in engaging with mathematical content and concepts as they learn, experience, and apply these skills and attitudes (Standards 8.MP.1–8).**
INDICATOR / CLUSTER	8.MP.1.	Make sense of problems and persevere in solving them. Explain the meaning of a problem and look for entry points to its solution. Analyze givens, constraints, relationships, and goals. Make conjectures about the form and meaning of the solution, plan a solution pathway, and continually monitor progress asking, “Does this make sense?” Consider analogous problems, make connections between multiple representations, identify the correspondence between different approaches, look for trends, and transform algebraic expressions to highlight meaningful mathematics. Check answers to problems using a different method.
INDICATOR / CLUSTER	8.MP.2.	Reason abstractly and quantitatively. Make sense of the quantities and their relationships in problem situations. Translate between context and algebraic representations by contextualizing and decontextualizing quantitative relationships. This includes the ability to decontextualize a given situation, representing it algebraically and manipulating symbols fluently as well as the ability to contextualize algebraic representations to make sense of the problem.
INDICATOR / CLUSTER	8.MP.3.	Construct viable arguments and critique the reasoning of others. Understand and use stated assumptions, definitions, and previously established results in constructing arguments. Make conjectures and build a logical progression of statements to explore the truth of their conjectures. Justify conclusions and communicate them to others. Respond to the arguments of others by listening, asking clarifying questions, and critiquing the reasoning of others.
INDICATOR / CLUSTER	8.MP.4.	Model with mathematics. Apply mathematics to solve problems arising in everyday life, society, and the workplace. Make assumptions and approximations, identifying important quantities to construct a mathematical model. Routinely interpret mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.
INDICATOR / CLUSTER	8.MP.6.	Attend to precision. Communicate precisely to others. Use explicit definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose. Specify units of measure and label axes to clarify the correspondence with quantities in a problem. Calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context.
INDICATOR / CLUSTER	8.MP.7.	Look for and make use of structure. Look closely at mathematical relationships to identify the underlying structure by recognizing a simple structure within a more complicated structure. See complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, see 5 – 3(x –y)^2 as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

INDICATOR / CLUSTER	8.MP.8.	Look for and express regularity in repeated reasoning. Notice if reasoning is repeated, and look for both generalizations and shortcuts. Evaluate the reasonableness of intermediate results by maintaining oversight of the process while attending to the details.
STANDARD / AREA OF LEARNING	**UT.8.EE.**	**EXPRESSIONS AND EQUATIONS (8.EE)**
OBJECTIVE / STRAND		**Work with radical and integer exponents (Standards 8.EE.1–4). Understand the connections between proportional relationships, lines, and linear relationships (Standards 8.EE.5–6). Analyze and solve linear equations and inequalities and pairs of simultaneous linear equations (Standards 8.EE.7–8).**
INDICATOR / CLUSTER	8.EE.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Utah Core Standards

Science

Grade **7** - Adopted: **2015**

STANDARD / AREA OF LEARNING		**SEEd - Grade 7 (2017)**
OBJECTIVE / STRAND	**Strand 7.2:**	**CHANGES TO EARTH OVER TIME**
INDICATOR / CLUSTER		**Earth's processes are dynamic and interactive, and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.**
EXPECTATION / STANDARD	Standard 7.2.2	Construct an explanation based on evidence for how processes have changed Earth's surface at varying time and spatial scales. Examples of processes that occur at varying time scales could include slow plate motions or rapid landslides. Examples of processes that occur at varying spatial scales could include uplift of a mountain range or deposition of fine sediments.

Grade **7** - 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.
INDICATOR / CLUSTER	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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.

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.
STANDARD / AREA OF LEARNING		**Reading Standards for Literacy in Science and Technical Subjects**
OBJECTIVE / STRAND		**Integration of Knowledge and Ideas**
INDICATOR / CLUSTER	RST.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
STANDARD / 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.
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

Science

Grade **8** - Adopted: **2015**

STANDARD / AREA OF LEARNING		**SEEd - Grade 8 (2017)**
OBJECTIVE / STRAND	**Strand 8.3:**	**LIFE SYSTEMS STORE AND TRANSFER MATTER AND ENERGY**

INDICATOR / CLUSTER		**Living things use energy from their environment to rearrange matter to sustain life. Photosynthetic organisms are able to transfer light energy to chemical energy. Consumers can break down complex food molecules to utilize the stored energy and use the particles to form new, life-sustaining molecules. Ecosystems are examples of how energy can flow while matter cycles through the living and nonliving components of systems.**
EXPECTATION / STANDARD	Standard 8.3.3	Ask questions to obtain, evaluate, and communicate information about how changes to an ecosystem affect the stability of cycling matter and the flow of energy among living and nonliving parts of an ecosystem. Emphasize describing the cycling of matter and flow of energy through the carbon cycle.
STANDARD / AREA OF LEARNING		**SEEd - Grade 8 (2017)**
OBJECTIVE / STRAND	**Strand 8.4:**	**INTERACTIONS WITH NATURAL SYSTEMS AND RESOURCES**
INDICATOR / CLUSTER		**Interactions of matter and energy through geologic processes have led to the uneven distribution of natural resources. Many of these resources are nonrenewable, and per-capita use can cause positive or negative consequences. Global temperatures change due to various factors, and can cause a change in regional climates. As energy flows through the physical world, natural disasters can occur that affect human life. Humans can study patterns in natural systems to anticipate and forecast some future disasters and work to mitigate the outcomes.**
EXPECTATION / STANDARD	Standard 8.4.3	Design a solution to monitor or mitigate the potential effects of the use of natural resources. Evaluate competing design solutions using a systematic process to determine how well each solution meets the criteria and constraints of the problem. Examples of uses of the natural environment could include agriculture, conservation efforts, recreation, solar energy, and water management.
EXPECTATION / STANDARD	Standard 8.4.4	Analyze and interpret data on the factors that change global temperatures and their effects on regional climates. Examples of factors could include agricultural activity, changes in solar radiation, fossil fuel use, and volcanic activity. Examples of data could include graphs of the atmospheric levels of gases, seawater levels, ice cap coverage, human activities, and maps of global and regional temperatures.
EXPECTATION / STANDARD	Standard 8.4.5	Analyze and interpret patterns of the occurrence of natural hazards to forecast future catastrophic events, and investigate how data are used to develop technologies to mitigate their effects. Emphasize how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow prediction, but others, such as earthquakes, may occur without warning.

Grade **8** - 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.
INDICATOR / CLUSTER	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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.

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.
STANDARD / AREA OF LEARNING		**Reading Standards for Literacy in Science and Technical Subjects**
OBJECTIVE / STRAND		**Integration of Knowledge and Ideas**
INDICATOR / CLUSTER	RST.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
STANDARD / 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.
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 **7** - 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 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	1	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
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.
INDICATOR	4	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.
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.
INDICATOR	2	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
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.
STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Algorithms and Programming (AP):**
INDICATOR / CLUSTER	**Standard 7.AP.1.**	**Design and iteratively develop programs that combine control structures. (Practice 5: Creating Computational Artifacts; Practice 6: Testing and Refining Computational Artifacts)**
EXPECTATION / STANDARD		Students will design, develop, test, and refine programs using control structures such as loops or conditional logic statements. For example, students will create a choose your own adventure story/presentation, a flowchart, or code a simple interactive game or animation.
STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Algorithms and Programming (AP):**
INDICATOR / CLUSTER	**Standard 7.AP.3.**	**Systematically test and refine programs using a range of test cases. (Practice 6: Testing and Refining Computational Artifacts.)**

EXPECTATION / STANDARD		Students will use a variety of problem-solving processes such as the engineering design process, decision matrix, pros and cons, or DMAIC (define, measure, analyze, improve and control) to test and refine a project or program. Students will test and refine a computer program, an engineering artifact, or solution. For example, students may test and refine a math program solving for surface area of different shapes (triangles, quadrilaterals, polygons, cubes).

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Algorithms and Programming (AP):**
INDICATOR / CLUSTER	**Standard 7.AP.4.**	**Select and assign tasks to maintain a project timeline when collaboratively developing computational artifacts. (Practice 2: Collaborating Around Computing. Practice 5: Creating Computational Artifacts.)**
EXPECTATION / STANDARD		Students will select, assign, and manage tasks within a project timeline of milestones and due dates while collaboratively working on projects. For example, students will use tools such as storyboards, to-do lists, team roles, and other project management tools to organize their projects and share the work across team members and help them be more efficient in managing time and resources.

Utah Core Standards
Technology Education
Grade **8** - 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 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	1	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
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.
INDICATOR	4	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.
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.
INDICATOR	2	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
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.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Data and Analysis (DA):**
INDICATOR / CLUSTER	**Standard 8.DA.3.**	**Test and analyze the effects of changing variables in models/simulations. (Practice 3. Recognizing and Defining Computational Problems; Practice 4. Developing and Using Abstractions; Practice 5. Creating Computational Artifacts)**
EXPECTATION / STANDARD		Students will demonstrate how changing variables will affect outcomes in a model/simulation. For example, students will understand the relationship between the mass and speed of objects and the relative amount of kinetic energy of the objects. Students can test and analyze a full cart vs. an empty cart or rolling spheres with different masses down a ramp to measure the effects on stationary masses.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Algorithms and Programming (AP):**
INDICATOR / CLUSTER	**Standard 8.AP.1.**	**Develop a program with iterative protocols that combine control structures and use compound conditions. (Practice 5. Creating Computational Artifacts; Practice 6. Testing and Refining Computational Artifacts)**
EXPECTATION / STANDARD		Students will develop programs that use compound conditions (True/False, If/Then, etc.) and loops. The development process should include multiple phases and pseudocode. For example, students will understand the relationship of cause and effect relationships in particle motion, temperature, density, and the state of a pure substance when heat energy is added or removed. Students can create true/false and if/then statements in the development process showing the results of adding and removing heat energy and the cause and effect it has on different substance's states.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Algorithms and Programming (AP):**
INDICATOR / CLUSTER	**Standard 8.AP.3.**	**Create a new program incorporating existing code, media, and libraries; and give proper attribution. (Practice 2. Collaborating Around Computing; Practice 4. Developing and Using Abstractions; Practice 5. Creating Computational Artifacts; Practice 7. Communicating about computing)**
EXPECTATION / STANDARD		Students will write original programs that incorporate someone else's code and/or media and give proper attribution to the source. Students can manipulate an existing file from a block code program (i.e. Scratch) to demonstrate the conflicts during the American expansion as American Indians were forced from their lands and the tensions over slavery.

Vermont Content Standards

Mathematics

Grade **7** - Adopted: **2010 (CCSS)**

STANDARD / STRAND	**VT.MP.**	**Mathematical Practices**

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

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

Vermont Content Standards

Mathematics

Grade **8** - Adopted: **2010 (CCSS)**

STANDARD / STRAND	**VT.MP.**	**Mathematical Practices**

ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.4.	Model with mathematics.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.6.	Attend to precision.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.7.	Look for and make use of structure.
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	MP.8.	Look for and express regularity in repeated reasoning.
STANDARD / STRAND	**VT.8.EE.**	**Expressions and Equations**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Understand the connections between proportional relationships, lines, and linear equations.**
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL	8.EE.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Vermont Content Standards

Science

Grade **7** - Adopted: **2014**

STANDARD / STRAND	**VT.MS-PS.**	**PHYSICAL SCIENCE**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	**MS-PS3.**	**Energy**

GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
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-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.**	**Earth's Systems**
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
STANDARD / STRAND	**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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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.

Grade **7** - 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.
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.

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.
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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

STANDARD / STRAND	**VT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Range of Reading and Level of Text Complexity**
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**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Text Types and Purposes**
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.**
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**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Production and Distribution of Writing**
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

Science

Grade **8** - Adopted: **2014**

STANDARD / STRAND	**VT.MS-PS.**	**PHYSICAL SCIENCE**

ESSENTIAL KNOWLEDGE AND SKILL / STANDARD	**MS-PS3.**	**Energy**
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.**	**Earth's Systems**
GRADE LEVEL EXPECTATION / KNOWLEDGE AND SKILL		**Students who demonstrate understanding can:**
GRADE LEVEL EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

STANDARD / STRAND	**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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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.

Grade **8** - 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.
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.

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.
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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

STANDARD / STRAND	**VT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Range of Reading and Level of Text Complexity**
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**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Text Types and Purposes**
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.**
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**
ESSENTIAL KNOWLEDGE AND SKILL / STANDARD		**Production and Distribution of Writing**
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.

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

Vermont Content Standards

Technology Education

Grade **8** - 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.**

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

Virginia Standards of Learning

Mathematics

Grade **7** - Adopted: **2016**

STRAND / TOPIC	**VA.PFA.7.**	**Patterns, Functions, and Algebra**
STANDARD / STRAND	**7.10.**	**The student will**
INDICATOR / STANDARD	7.10.b.	Graph a line representing a proportional relationship between two quantities given the slope and an ordered pair, or given the equation in y = mx form where m represents the slope as rate of change.

INDICATOR / STANDARD	7.10.d.	Graph a line representing an additive relationship between two quantities given the y-intercept and an ordered pair, or given the equation in the form y = x + b, where b represents the y-intercept.

Virginia Standards of Learning

Mathematics

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

STRAND / TOPIC	**VA.PFA.8.**	**Patterns, Functions, and Algebra**
STANDARD / STRAND	**8.16.**	**The student will**
INDICATOR / STANDARD	8.16.d.	Graph a linear function given the equation in y = mx + b form.

Virginia Standards of Learning

Science

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

STRAND / TOPIC		**Life Science**
STANDARD / STRAND	**LS.8.**	**The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time. Key ideas include:**
INDICATOR / STANDARD	LS.8.c.	large-scale changes such as eutrophication, climate changes, and catastrophic disturbances affect ecosystems.
STRAND / TOPIC		**Life Science**
STANDARD / STRAND	**LS.9.**	**The student will investigate and understand that relationships exist between ecosystem dynamics and human activity. Key ideas include:**
INDICATOR / STANDARD	LS.9.a.	changes in habitat can disturb populations;
STRAND / TOPIC		**Physical Science**
STANDARD / STRAND	**PS.5.**	**The student will investigate and understand that energy is conserved. Key ideas include:**
INDICATOR / STANDARD	PS.5.a.	energy can be stored in different ways;
INDICATOR / STANDARD	PS.5.b.	energy is transferred and transformed;

Virginia Standards of Learning

Science

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

STRAND / TOPIC		**Life Science**
STANDARD / STRAND	**LS.8.**	**The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time. Key ideas include:**
INDICATOR / STANDARD	LS.8.c.	large-scale changes such as eutrophication, climate changes, and catastrophic disturbances affect ecosystems.

STRAND / TOPIC		**Life Science**
STANDARD / STRAND	**LS.9.**	**The student will investigate and understand that relationships exist between ecosystem dynamics and human activity. Key ideas include:**
INDICATOR / STANDARD	LS.9.a.	changes in habitat can disturb populations;

STRAND / TOPIC		**Physical Science**
STANDARD / STRAND	**PS.5.**	**The student will investigate and understand that energy is conserved. Key ideas include:**
INDICATOR / STANDARD	PS.5.a.	energy can be stored in different ways;
INDICATOR / STANDARD	PS.5.b.	energy is transferred and transformed;

Virginia Standards of Learning

Technology Education

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

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND	**CS.MCSE.**	**Middle School Computer Science Elective (MSCE) Standards**
INDICATOR / STANDARD		**6-week Core Module - Algorithms and Programming**
INDICATOR	MSCSE.1.	The student will design and iteratively develop programs that combine control structures, including loops and conditionals.
INDICATOR	MSCSE.2.	The student will investigate variables and data types, including simple operations on strings.

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND	**CS.MCSE.**	**Middle School Computer Science Elective (MSCE) Standards**
INDICATOR / STANDARD		**Data and Analysis**
INDICATOR	MSCSE.14.	The student will refine computational models based on the data they have generated.

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND		**Algorithms and Programming**
INDICATOR / STANDARD	**7.1.**	**The student will construct programs to accomplish a task as a means of creative expression or scientific exploration using a block based or text based programming language, both independently and collaboratively,**
INDICATOR	7.1.a.	Combining control structures such as if-statements and loops including compound conditionals.

INDICATOR	7.1.b.	Creating clearly named variables that represent different data types, including numeric and non-numeric data, and perform operations on their values. [Related SOL: Math 7.1, 7.2]

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND		**Data and Analysis**
INDICATOR / STANDARD	7.8.	The student will discuss the correctness of a model representing a system by comparing the model's generated results with data that were observed in the system being modeled.
INDICATOR / STANDARD	7.9.	The student will refine computational models based on the data they have generated.

Grade **7** - 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**
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	**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.B.**	**Use collaborative technologies to work with others, including peers, experts, and community members to examine issues and problems from multiple viewpoints.**
PROGRESS INDICATOR	GC.B.m.	Students use collaborative technologies to work with others, including peers, experts, and online community members to gain broader perspectives as they examine issues, problems, and opportunities.

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.

Virginia Standards of Learning

Technology Education

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

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND	**CS.MCSE.**	**Middle School Computer Science Elective (MSCE) Standards**
INDICATOR / STANDARD		**6-week Core Module - Algorithms and Programming**
INDICATOR	MSCSE.1.	The student will design and iteratively develop programs that combine control structures, including loops and conditionals.
INDICATOR	MSCSE.2.	The student will investigate variables and data types, including simple operations on strings.

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND	**CS.MCSE.**	**Middle School Computer Science Elective (MSCE) Standards**
INDICATOR / STANDARD		**Data and Analysis**
INDICATOR	MSCSE.14.	The student will refine computational models based on the data they have generated.

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND		**Algorithms and Programming**
INDICATOR / STANDARD	**8.1.**	**The student will construct programs to accomplish a task as a means of creative expression or scientific exploration using a block based or text based programming language, both independently and collaboratively,**
INDICATOR	8.1.a.	Combining control structures such as if-statements and loops including nested conditionals and loops.
INDICATOR	8.1.b.	Using clearly named variables that represent different data types, including numeric and non-numeric data, and perform operations on their values. [Related SOL: Math 7.1, 7.2]

STRAND / TOPIC	**VA.CS.**	**Computer Science**
STANDARD / STRAND		**Data and Analysis**
INDICATOR / STANDARD	**8.8.**	**The student will**
INDICATOR	8.8.a.	Explain the difference between a model and a simulation.

INDICATOR	8.8.b.	Create computational models to conduct simulations.

Grade **8** - 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.**
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STRAND / TOPIC		**Digital Learning Integration Standards of Learning for Virginia Public Schools**

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

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.CC.7.MP.**	**Mathematical Practices**

STANDARD / ESSENTIAL SKILL	7.MP.1.	Make sense of problems and persevere in solving them.
STANDARD / ESSENTIAL SKILL	7.MP.2.	Reason abstractly and quantitatively.
STANDARD / ESSENTIAL SKILL	7.MP.3.	Construct viable arguments and critique the reasoning of others.
STANDARD / ESSENTIAL SKILL	7.MP.4.	Model with mathematics.
STANDARD / ESSENTIAL SKILL	7.MP.6.	Attend to precision.
STANDARD / ESSENTIAL SKILL	7.MP.7.	Look for and make use of structure.
STANDARD / ESSENTIAL SKILL	7.MP.8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / STRAND / DISCIPLINE	**DC.CC.7. EE.**	**Expressions and Equations**
STANDARD / ESSENTIAL SKILL		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
STUDENT EXPECTATION / ESSENTIAL SKILL	**7.EE.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
EXPECTATION	7.EE.4.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Washington DC Academic Standards

Mathematics

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

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.CC.8. MP.**	**Mathematical Practices**
STANDARD / ESSENTIAL SKILL	8.MP.1.	Make sense of problems and persevere in solving them.

STANDARD / ESSENTIAL SKILL	8.MP.2.	Reason abstractly and quantitatively.
STANDARD / ESSENTIAL SKILL	8.MP.3.	Construct viable arguments and critique the reasoning of others.
STANDARD / ESSENTIAL SKILL	8.MP.4.	Model with mathematics.
STANDARD / ESSENTIAL SKILL	8.MP.6.	Attend to precision.
STANDARD / ESSENTIAL SKILL	8.MP.7.	Look for and make use of structure.
STANDARD / ESSENTIAL SKILL	8.MP.8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / STRAND / DISCIPLINE	**DC.CC.8.EE.**	**Expressions and Equations**
STANDARD / ESSENTIAL SKILL		**Understand the connections between proportional relationships, lines, and linear equations.**
STUDENT EXPECTATION / ESSENTIAL SKILL	8.EE.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Washington DC Academic Standards

Science

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

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.MS-PS.**	**PHYSICAL SCIENCE**
STANDARD / ESSENTIAL SKILL	**MS-PS3.**	**Energy**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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:**
EXPECTATION	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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**
STANDARD / ESSENTIAL SKILL	**MS-ESS2.**	**Earth's Systems**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.MS-ESS.**	**EARTH AND SPACE SCIENCE**
STANDARD / ESSENTIAL SKILL	**MS-ESS3.**	**Earth and Human Activity**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.MS-ETS.**	**ENGINEERING DESIGN**

STANDARD / ESSENTIAL SKILL	**MS-ETS1.**	**Engineering Design**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
EXPECTATION	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
EXPECTATION	MS-ETS1-4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

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

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD / ESSENTIAL SKILL		**Key Ideas and Details**
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.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.

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.MS-PS.**	**PHYSICAL SCIENCE**
STANDARD / ESSENTIAL SKILL	**MS-PS3.**	**Energy**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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:**
EXPECTATION	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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**
STANDARD / ESSENTIAL SKILL	**MS-ESS2.**	**Earth's Systems**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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

EXPECTATION	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
CONTENT STANDARD / STRAND / DISCIPLINE	**DC.MS-ETS.**	**ENGINEERING DESIGN**
STANDARD / ESSENTIAL SKILL	**MS-ETS1.**	**Engineering Design**
STUDENT EXPECTATION / ESSENTIAL SKILL		**Students who demonstrate understanding can:**
EXPECTATION	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
EXPECTATION	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
EXPECTATION	MS-ETS1-4.	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

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

CONTENT STANDARD / STRAND / DISCIPLINE	**DC.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD / ESSENTIAL SKILL		**Key Ideas and Details**
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.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 **7** - 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.6.	Attend to precision.
BIG IDEA / CORE CONTENT	MP.7.	Look for and make use of structure.
BIG IDEA / CORE CONTENT	MP.8.	Look for and express regularity in repeated reasoning.

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

Washington State K-12 Learning Standards and Guidelines

Mathematics

Grade **8** - 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.6.	Attend to precision.
BIG IDEA / CORE CONTENT	MP.7.	Look for and make use of structure.
BIG IDEA / CORE CONTENT	MP.8.	Look for and express regularity in repeated reasoning.

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

Washington State K-12 Learning Standards and Guidelines

Science

Grade **7** - Adopted: **2014**

EALR	WA.MS-PS.	PHYSICAL SCIENCE
BIG IDEA / CORE CONTENT	**MS-PS3.**	**Energy**
CORE CONTENT / CONTENT STANDARD		**Students who demonstrate understanding can:**

CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.**	**Earth's Systems**
CORE CONTENT / CONTENT STANDARD		**Students who demonstrate understanding can:**
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
CONTENT STANDARD / 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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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.
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.

Grade **7** - 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.
CORE CONTENT / CONTENT STANDARD	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

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.

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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

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.

Science

Grade **8** - Adopted: **2014**

EALR	WA.MS-PS.	PHYSICAL SCIENCE
BIG IDEA / CORE CONTENT	**MS-PS3.**	**Energy**
CORE CONTENT / CONTENT STANDARD		**Students who demonstrate understanding can:**
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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-ESS2.**	**Earth's Systems**
CORE CONTENT / CONTENT STANDARD		**Students who demonstrate understanding can:**
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

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-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
CONTENT STANDARD / 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-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
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.
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.

Grade **8** - 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.

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

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.
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.

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.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

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 **7** - Adopted: **2018**

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.b.	Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.
CORE CONTENT / CONTENT STANDARD	6-8.4.c.	Students engage in a design process to develop, test and revise prototypes, embracing the cyclical process of trial and error and understanding problems or setbacks as potential opportunities for improvement.

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-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-DA.**	**Data and Analysis**

CONTENT STANDARD / PERFORMANCE EXPECTATION	2-DA-09.	Refine computational models based on the data they have generated. (P. 5.3, P. 4.4)

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-11.	Create clearly named variables that represent different data types and perform operations on their values. (P. 5.1, P. 5.2)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P. 5.1, P. 5.2)
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)

Washington State K-12 Learning Standards and Guidelines

Technology Education

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

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.b.	Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.

CORE CONTENT / CONTENT STANDARD	6-8.4.c.	Students engage in a design process to develop, test and revise prototypes, embracing the cyclical process of trial and error and understanding problems or setbacks as potential opportunities for improvement.

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-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-DA.**	**Data and Analysis**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-DA-09.	Refine computational models based on the data they have generated. (P. 5.3, P. 4.4)

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-11.	Create clearly named variables that represent different data types and perform operations on their values. (P. 5.1, P. 5.2)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-12.	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. (P. 5.1, P. 5.2)
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)

West Virginia College and Career Readiness Standards

Mathematics

Grade **7** - Adopted: **2016**

CONTENT STANDARD / COURSE	**WV.M.MHM.**	**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	MHM6.	Attend to precision.
CONTENT STANDARD / OBJECTIVE	MHM7.	Look for and make use of structure.
CONTENT STANDARD / OBJECTIVE	MHM8.	Look for and express regularity in repeated reasoning.

CONTENT STANDARD / COURSE	**WV.M.7.EE.**	**Expressions and Equations**
CONTENT STANDARD / OBJECTIVE		**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
OBJECTIVE / EXPECTATION	**M.7.10.**	**Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities.**

GRADE LEVEL EXPECTATION	M.7.10.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. (e.g., The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? An arithmetic solution similar to “54 – 6 – 6 divided by 2” may be compared with the reasoning involved in solving the equation 2w – 12 = 54. An arithmetic solution similar to “54/2 – 6” may be compared with the reasoning involved in solving the equation 2(w – 6) = 54.)

West Virginia College and Career Readiness Standards

Mathematics

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

CONTENT STANDARD / COURSE	**WV.M.MHM.**	**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	MHM6.	Attend to precision.
CONTENT STANDARD / OBJECTIVE	MHM7.	Look for and make use of structure.
CONTENT STANDARD / OBJECTIVE	MHM8.	Look for and express regularity in repeated reasoning.
CONTENT STANDARD / COURSE	**WV.M.8.EE.**	**Expressions and Equations**
CONTENT STANDARD / OBJECTIVE		**Understand the connections between proportional relationships, lines, and linear equations.**
OBJECTIVE / EXPECTATION	M.8.7.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. (e.g., Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.)
CONTENT STANDARD / COURSE	**WV.M.1HS8.**	**8th Grade High School Mathematics I**

CONTENT STANDARD / OBJECTIVE		**Relationships between Quantities**
OBJECTIVE / EXPECTATION		**Create equations that describe numbers or relationships.**
GRADE LEVEL EXPECTATION	M.1HS8.6.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

CONTENT STANDARD / COURSE	**WV.M.1HS8.**	**8th Grade High School Mathematics I**
CONTENT STANDARD / OBJECTIVE		**Linear and Exponential Relationships**
OBJECTIVE / EXPECTATION		**Analyze functions using different representations.**
GRADE LEVEL EXPECTATION	**M.1HS8.23.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
INDICATOR	M.1HS8.23.a.	Graph linear and quadratic functions and show intercepts, maxima, and minima.

CONTENT STANDARD / COURSE	**WV.M.1HS8.**	**8th Grade High School Mathematics I**
CONTENT STANDARD / OBJECTIVE		**Linear and Exponential Relationships**
OBJECTIVE / EXPECTATION		**Construct and compare linear, quadratic, and exponential models and solve problems.**
GRADE LEVEL EXPECTATION	**M.1HS8.28.**	**Distinguish between situations that can be modeled with linear functions and with exponential functions.**
INDICATOR	M.1HS8.28.a.	Prove that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.

CONTENT STANDARD / COURSE	**WV.M.1HS8.**	**8th Grade High School Mathematics I**
CONTENT STANDARD / OBJECTIVE		**Reasoning with Equations**
OBJECTIVE / EXPECTATION		**Understand solving equations as a process of reasoning and explain the reasoning.**
GRADE LEVEL EXPECTATION	M.1HS8.32.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

CONTENT STANDARD / COURSE	**WV.M.1HS8.**	**8th Grade High School Mathematics I**
CONTENT STANDARD / OBJECTIVE		**Connecting Algebra and Geometry through Coordinates**

OBJECTIVE / EXPECTATION		**Use coordinates to prove simple geometric theorems algebraically.**
GRADE LEVEL EXPECTATION	M.1HS8.63.	Prove the slope criteria for parallel and perpendicular lines; use them to solve geometric problems. (e.g., Find the equation of a line parallel or perpendicular to a given line that passes through a given point.)
CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Relationships between Quantities and Reasoning with Equations**
OBJECTIVE / EXPECTATION		**Create equations that describe numbers or relationships.**
GRADE LEVEL EXPECTATION	M.A18.6.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Relationships between Quantities and Reasoning with Equations**
OBJECTIVE / EXPECTATION		**Understand solving equations as a process of reasoning and explain the reasoning.**
GRADE LEVEL EXPECTATION	M.A18.9.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Linear and Exponential Relationships**
OBJECTIVE / EXPECTATION		**Analyze functions using different representations.**
GRADE LEVEL EXPECTATION	**M.A18.30.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
INDICATOR	M.A18.30.a.	Graph linear and quadratic functions and show intercepts, maxima, and minima.
CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Linear and Exponential Relationships**
OBJECTIVE / EXPECTATION		**Construct and compare linear, quadratic, and exponential models and solve problems.**
GRADE LEVEL EXPECTATION	**M.A18.35.**	**Distinguish between situations that can be modeled with linear functions and with exponential functions.**

INDICATOR	M.A18.35.a.	Prove that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.

CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Expressions and Equations**
OBJECTIVE / EXPECTATION		**Create equations that describe numbers or relationships.**
GRADE LEVEL EXPECTATION	M.A18.56.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

CONTENT STANDARD / COURSE	**WV.M.A18.**	**High School Algebra I for 8th Grade**
CONTENT STANDARD / OBJECTIVE		**Quadratic Functions and Modeling**
OBJECTIVE / EXPECTATION		**Analyze functions using different representations.**
GRADE LEVEL EXPECTATION	**M.A18.67.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
INDICATOR	M.A18.67.a.	Graph linear and quadratic functions and show intercepts, maxima, and minima.

West Virginia College and Career Readiness Standards

Science

Grade **7** - Adopted: **2021**

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		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
GRADE LEVEL EXPECTATION		Tracking energy and matter flows, into, out of, and within systems to understand system behavior
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		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 7**
CONTENT STANDARD / OBJECTIVE		**PHYSICAL Science**
OBJECTIVE / EXPECTATION		**Energy**
GRADE LEVEL EXPECTATION	S.7.7.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
CONTENT STANDARD / COURSE		**Science – Grade 7**
CONTENT STANDARD / OBJECTIVE		**Earth and Space Science**
OBJECTIVE / EXPECTATION		**History of Earth**
GRADE LEVEL EXPECTATION	S.7.19.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
CONTENT STANDARD / COURSE		**Science – Grade 7**
CONTENT STANDARD / OBJECTIVE		**Engineering, Technology, and Applications of Science**
OBJECTIVE / EXPECTATION		**Engineering Design**
GRADE LEVEL EXPECTATION	S.7.22.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering limitations to solutions including scientific principles and potential relevant possible impacts on people and the environment.

GRADE LEVEL EXPECTATION	S.7.23.	Analyze data from tests to determine which characteristics of design can be combined into a new solution to better meet the criteria for success.

West Virginia College and Career Readiness Standards

Science

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

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		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
GRADE LEVEL EXPECTATION		Tracking energy and matter flows, into, out of, and within systems to understand system behavior
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		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 8**

CONTENT STANDARD / OBJECTIVE		**Engineering, Technology, and Applications of Science**
OBJECTIVE / EXPECTATION		**Engineering Design**
GRADE LEVEL EXPECTATION	S.8.18.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
GRADE LEVEL EXPECTATION	S.8.19.	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.

West Virginia College and Career Readiness Standards

Technology Education

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

CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Technology 6-8**
OBJECTIVE / EXPECTATION		**Innovative Designer**
GRADE LEVEL EXPECTATION	T.6-8.15.	Explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Technology 6-8**
OBJECTIVE / EXPECTATION		**Global Collaborator**
GRADE LEVEL EXPECTATION	T.6-8.20.	Select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues.

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.6-8.12.	Write computer program(s) to solve simple problems and document the process for others to reference.

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.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.11.	Analyze the degree to which a computer model accurately represents the real world.
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.24.	Implement problem solutions using a programming language, including: looping behavior, conditional statements, logic, expressions, variables, and functions.
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).

West Virginia College and Career Readiness Standards

Technology Education

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

CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Technology 6-8**
OBJECTIVE / EXPECTATION		**Innovative Designer**
GRADE LEVEL EXPECTATION	T.6-8.15.	Explore real-world issues and problems and actively pursue an understanding of them and solutions for them.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Technology 6-8**

OBJECTIVE / EXPECTATION		**Global Collaborator**
GRADE LEVEL EXPECTATION	T.6-8.20.	Select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues.
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.6-8.12.	Write computer program(s) to solve simple problems and document the process for others to reference.
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.9.	Interact with content-specific models and simulations (e.g., ecosystems, epidemics, molecular dynamics) to support learning and research.
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GRADE LEVEL EXPECTATION	CS.DCS.24.	Implement problem solutions using a programming language, including: looping behavior, conditional statements, logic, expressions, variables, and functions.
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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 **7** - Adopted: **2021**

DOMAIN		Standards for Mathematical Practice
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 6:	Attend to precision.
CONTENT STANDARD	Math Practice 7:	Look for and make use of structure.
CONTENT STANDARD	Math Practice 8:	Look for and express regularity in repeated reasoning.

DOMAIN		Grade 7 Content Standards
CONTENT STANDARD	**M.7.EE.**	**The Expressions and Equations (7.EE)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**M.7.EE.B.**	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (M)**
DESCRIPTOR / FOCUS AREA	**M.7.EE.B.4.**	**Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
LEARNING CONTINUUM	M.7.EE.B.4.a.	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Flexibly and efficiently apply the properties of operations and equality to solve equations of these forms. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

Wisconsin Academic Standards

Mathematics

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

DOMAIN		Standards for Mathematical Practice
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 6:	Attend to precision.
CONTENT STANDARD	Math Practice 7:	Look for and make use of structure.
CONTENT STANDARD	Math Practice 8:	Look for and express regularity in repeated reasoning.

DOMAIN		Grade 8 Content Standards
CONTENT STANDARD	**M.8.EE.**	**The Expressions and Equations (8.EE)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**M.8.EE.B.**	**Understand the connections between proportional relationships, lines, and linear equations.**
DESCRIPTOR / FOCUS AREA	M.8.EE.B.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Wisconsin Academic Standards

Science

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

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.CC.**	**Crosscutting Concepts (CC)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.CC5.**	**Students use science and engineering practices, disciplinary core ideas, and an understanding of energy and matter to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA		**Energy and Matter**
LEARNING CONTINUUM	SCI.CC5.m.	Students understand matter is conserved because atoms are conserved in physical and chemical processes. They also understand that within a natural or designed system the transfer of energy drives the motion and cycling of matter. Energy may take different forms (e.g. energy in fields, thermal energy, and energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system.

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 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 identify patterns in large data sets and use mathematical concepts to support explanations and arguments. This includes the following:**
LEARNING CONTINUUM	SCI.SEP 5.A.m.2.	Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends.
LEARNING CONTINUUM	SCI.SEP 5.A.m.3.	Use mathematical representations to describe and support scientific conclusions and design solutions.
LEARNING CONTINUUM	SCI.SEP 5.A.m.4.	Create algorithms (a series of ordered steps) to solve a problem.
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.

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 construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:**
LEARNING CONTINUUM	SCI.SEP 6.A.m.1.	Construct an explanation that includes qualitative or quantitative relationships between variables that predict and describe phenomena.
LEARNING CONTINUUM	SCI.SEP 6.A.m.2.	Construct an explanation using models or representations.
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.
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.
LEARNING CONTINUUM	SCI.SEP 6.A.m.5.	Apply scientific reasoning to show why the data or evidence is adequate for the 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 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.LS.**	**Disciplinary Core Idea: Life Science (LS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.LS2.**	**Students use science and engineering practices, crosscutting concepts, and an understanding of the interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA	**SCI.LS2. C.**	**Ecosystem Dynamics, Functioning, and Resilience**
LEARNING CONTINUUM	SCI.LS2. C.m.	Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	**SCI.PS.**	**Disciplinary Core Idea: Physical Science (PS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.PS3.**	**Students use science and engineering practices, crosscutting concepts, and an understanding of energy to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA	**SCI.PS3. B.**	**Conservation of Energy and Energy Transfer**
LEARNING CONTINUUM	SCI.PS3. B.m.	Energy changes to and from each type can be tracked through physical or chemical interactions. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter.

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.B.**	**Natural Hazards**
LEARNING CONTINUUM	SCI.ESS3 .B.m.	Patterns can be seen through mapping the history of natural hazards in a region and understanding related geological forces.

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.D.**	**Global Climate Change**
LEARNING CONTINUUM	SCI.ESS3 .D.m.	Evidence suggests human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.

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.ETS1.	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.ETS1.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.ETS2.	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.ETS2.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.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS.	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS2.	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.ETS2.B.	Influence of Engineering, Technology, and Science on Society and the Natural World

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.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS.	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS3.	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.ETS3.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.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS.	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS3.	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.ETS3.B.	Science and Engineering Are Unique Ways of Thinking with Different Purposes

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.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ETS.	Disciplinary Core Idea: Engineering, Technology, and the Application of Science (ETS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ETS3.	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.ETS3.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

Science

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

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.CC.	Crosscutting Concepts (CC)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.CC5.	Students use science and engineering practices, disciplinary core ideas, and an understanding of energy and matter to make sense of phenomena and solve problems.

DESCRIPTOR / FOCUS AREA		**Energy and Matter**
LEARNING CONTINUUM	SCI.CC5.m.	Students understand matter is conserved because atoms are conserved in physical and chemical processes. They also understand that within a natural or designed system the transfer of energy drives the motion and cycling of matter. Energy may take different forms (e.g. energy in fields, thermal energy, and energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system.

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 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 identify patterns in large data sets and use mathematical concepts to support explanations and arguments. This includes the following:**
LEARNING CONTINUUM	SCI.SEP 5.A.m.2.	Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends.
LEARNING CONTINUUM	SCI.SEP 5.A.m.3.	Use mathematical representations to describe and support scientific conclusions and design solutions.

LEARNING CONTINUUM	SCI.SEP 5.A.m.4.	Create algorithms (a series of ordered steps) to solve a problem.
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.

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 construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:**
LEARNING CONTINUUM	SCI.SEP 6.A.m.1.	Construct an explanation that includes qualitative or quantitative relationships between variables that predict and describe phenomena.
LEARNING CONTINUUM	SCI.SEP 6.A.m.2.	Construct an explanation using models or representations.
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.
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.
LEARNING CONTINUUM	SCI.SEP 6.A.m.5.	Apply scientific reasoning to show why the data or evidence is adequate for the 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 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.LS.**	**Disciplinary Core Idea: Life Science (LS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.LS2.**	**Students use science and engineering practices, crosscutting concepts, and an understanding of the interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA	**SCI.LS2.C.**	**Ecosystem Dynamics, Functioning, and Resilience**
LEARNING CONTINUUM	SCI.LS2.C.m.	Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

DOMAIN	**WI.SCI.**	**Science**
CONTENT STANDARD	**SCI.PS.**	**Disciplinary Core Idea: Physical Science (PS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.PS3.**	**Students use science and engineering practices, crosscutting concepts, and an understanding of energy to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA	**SCI.PS3.B.**	**Conservation of Energy and Energy Transfer**
LEARNING CONTINUUM	SCI.PS3.B.m.	Energy changes to and from each type can be tracked through physical or chemical interactions. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter.

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.B.**	**Natural Hazards**
LEARNING CONTINUUM	SCI.ESS3.B.m.	Patterns can be seen through mapping the history of natural hazards in a region and understanding related geological forces.

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.D.**	**Global Climate Change**
LEARNING CONTINUUM	SCI.ESS3 .D.m.	Evidence suggests human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.

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.

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.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.

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.

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.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.

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

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 .9.m.	Create variables that represent different types of data and manipulate their values.

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.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.

Wisconsin Academic Standards

Technology Education

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

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.9.m.	Create variables that represent different types of data and manipulate their values.

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.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.

Wyoming Content and Performance Standards

Mathematics

Grade **7** - 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	6	Attend to precision.
BENCHMARK	7	Look for and make use of structure.
BENCHMARK	8	Look for and express regularity in repeated reasoning.
CONTENT STANDARD		**Expressions and Equations**
BENCHMARK	**7.EE.D.**	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
GRADE LEVEL EXAMPLE	**7.EE.D.4.**	**Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations.**
EXPECTATION	7.EE.D.4 A.	Write and fluently solve linear equations of the form ax +b = c and a(x + b) = c where a, b, and c are rational numbers.

Wyoming Content and Performance Standards

Mathematics

Grade **8** - 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	6	Attend to precision.
BENCHMARK	7	Look for and make use of structure.
BENCHMARK	8	Look for and express regularity in repeated reasoning.

CONTENT STANDARD		**Expressions and Equations**
BENCHMARK	**8.EE.C.**	**Understand the connections between proportional relationships, lines, and linear equations.**
GRADE LEVEL EXAMPLE	8.EE.C.5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Wyoming Content and Performance Standards

Science

Grade **7** - Adopted: **2016**

CONTENT STANDARD		**PHYSICAL SCIENCE**
BENCHMARK	**MS-PS3.**	**Energy**
GRADE LEVEL EXAMPLE	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

CONTENT STANDARD		**PHYSICAL SCIENCE**
BENCHMARK	**MS-PS4.**	**Waves and their Applications in Technologies for Information Transfer**
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.

CONTENT STANDARD		**LIFE SCIENCE**
BENCHMARK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GRADE LEVEL EXAMPLE	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
GRADE LEVEL EXAMPLE	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

CONTENT STANDARD		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS2.**	**Earth's Systems**
GRADE LEVEL EXAMPLE	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

CONTENT STANDARD		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**
GRADE LEVEL EXAMPLE	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
GRADE LEVEL EXAMPLE	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused changes in global temperatures over time.

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.
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.
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.

Grade **7** - 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.
GRADE LEVEL EXAMPLE	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

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.
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.

CONTENT STANDARD	**RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Integration of Knowledge and Ideas**
GRADE LEVEL EXAMPLE	RST.6-8.9.	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	**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.

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.
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.
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.

Wyoming Content and Performance Standards

Science

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

CONTENT STANDARD		**PHYSICAL SCIENCE**
BENCHMARK	**MS-PS3.**	**Energy**
GRADE LEVEL EXAMPLE	MS-PS3-3.	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
CONTENT STANDARD		**PHYSICAL SCIENCE**
BENCHMARK	**MS-PS4.**	**Waves and their Applications in Technologies for Information Transfer**
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.
CONTENT STANDARD		**LIFE SCIENCE**
BENCHMARK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GRADE LEVEL EXAMPLE	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
GRADE LEVEL EXAMPLE	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
CONTENT STANDARD		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS2.**	**Earth's Systems**
GRADE LEVEL EXAMPLE	MS-ESS2-2.	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

CONTENT STANDARD		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**
GRADE LEVEL EXAMPLE	MS-ESS3-2.	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
GRADE LEVEL EXAMPLE	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused changes in global temperatures over time.
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.
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.
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.

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

GRADE LEVEL EXAMPLE	RST.6-8.9.	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	**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.
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.
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.
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.

Wyoming Content and Performance Standards

Technology Education

Grade **7** - 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**

EXPECTATION	3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
EXPECTATION	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
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.
EXPECTATION	4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.
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.
EXPECTATION	6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.
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	**DA.IM.**	**Inference & Models**
EXPECTATION	8.DA.IM.01.	Refine computational models based on generated data.

CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**MS Computer Science Standards**
GRADE LEVEL EXAMPLE	**AP.V.**	**Variables**
EXPECTATION	8.AP.V.01.	Using grade appropriate content and complexity, create clearly named variables that represent different data types and perform operations on their values.

CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**MS Computer Science Standards**
GRADE LEVEL EXAMPLE	**AP.C.**	**Control**
EXPECTATION	8.AP.C.01.	Using grade appropriate content and complexity, design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

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.

Wyoming Content and Performance Standards

Technology Education

Grade **8** - 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
EXPECTATION	3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
EXPECTATION	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

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.
EXPECTATION	4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

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