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

Forward Education

Harnessing the Sun's Energy with Solar Panels

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.

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.

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.B2.	Describe how energy can be changed from one form to another (transformed) as it moves through a system or transferred from one system to another system.

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.
DESCRIPTOR / STANDARD	3.4.7.B2.	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.

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	**4.3.**	**Natural Resources**
STANDARD	**4.3.7.A.**	**Explain how products are derived from natural resources.**

DESCRIPTOR / STANDARD	4.3.7.A.2.	Differentiate between renewable and nonrenewable resources.

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.B6.	(PATTERNS) Explain how physics principles underlie everyday phenomena and important technologies.

SUBJECT / STANDARD AREA	**PA.3.**	**Science and Technology and Engineering Education**
STANDARD AREA / STATEMENT	**3.3.**	**Earth and Space Sciences**
STANDARD	**3.3.A.**	**Earth Structure, Processes and Cycles**
DESCRIPTOR / STANDARD	3.3.8.A1b.	Compare and contrast the types of energy that drive Earth's systems.
DESCRIPTOR / STANDARD	3.3.8.A2.	Describe renewable and nonrenewable energy resources.

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.B2.	Compare and contrast decisions to develop and use technologies as related to environmental and economic concerns.
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.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.3.**	**Natural Resources**
STANDARD	4.3.8.A.	Compare and contrast alternative sources of energy.

SUBJECT / STANDARD AREA	**PA.4.**	**Environment and Ecology**
STANDARD AREA / STATEMENT	**4.5.**	**Humans and the Environment**
STANDARD	4.5.8.C.	Describe how humans can reduce pollution.

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	**CST.A.2.**	**Level 2 (Ages 11-14)**

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

SUBJECT / STANDARD AREA	**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-15.	Seek and incorporate feedback from team members and users to refine a solution that meets user needs. (P2.3, P1.1)

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)

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

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

SUBJECT / STANDARD AREA	CSTA.2.	Level 2 (Ages 11-14)
STANDARD AREA / STATEMENT	2-AP.	Algorithms & Programming
STANDARD		Program Development
DESCRIPTOR / STANDARD	2-AP-15.	Seek and incorporate feedback from team members and users to refine a solution that meets user needs. (P2.3, P1.1)

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)

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.

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.

Rhode Island World-Class Standards

Science

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
SPECIFIC INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

SPECIFIC INDICATOR	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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-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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
SPECIFIC INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
SPECIFIC INDICATOR	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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 **8** - 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

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.

DOMAIN		**ISTE Standards for Students**
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.5.**	**Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**

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

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

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-A.**	**Algorithms**
SPECIFIC INDICATOR	2-CT-A-1.	Use diagrams and/or pseudocode to plan, analyze, solve and/or code complex problems as algorithms.

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.

DOMAIN		**ISTE Standards for Students**
STATEMENT OF ENDURING KNOWLEDGE	**RI.ISTE-S.5.**	**Computational Thinkers: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**
GSE STEM	ISTE-S.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.
GSE STEM	ISTE-S.5.b.	Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

GSE STEM	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

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

DOMAIN		**Computer Science**
STATEMENT OF ENDURING KNOWLEDGE	**2-CT.**	**Computational Thinking & Programming**
GSE STEM	**2-CT-A.**	**Algorithms**
SPECIFIC INDICATOR	2-CT-A-1.	Use diagrams and/or pseudocode to plan, analyze, solve and/or code complex problems as algorithms.

South Carolina Standards & Learning

Mathematics

Grade **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.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.1.	Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients.

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.7c.	Look for structures to interpret meaning and develop solution strategies.

STANDARD / COURSE		Earth and Space Science (ESS)
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**Earth and Human Activity (ESS3)**
PERFORMANCE DESCRIPTOR / STANDARD	7-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
PERFORMANCE 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-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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	**3**	**Recognize, define, and analyze computational problems.**
GRADE LEVEL EXAMPLE / STAGE	3.a.	Recognize when it is appropriate to solve a problem computationally.
GRADE LEVEL EXAMPLE / STAGE	3.b.	Make sense of computational problems and persevere in solving them.
GRADE LEVEL EXAMPLE / STAGE	3.c.	Relate computational problems to prior knowledge.
GRADE LEVEL EXAMPLE / STAGE	3.d.	Recognize that there may be multiple approaches to solving a problem.
GRADE LEVEL EXAMPLE / STAGE	3.e.	Approach problem solving iteratively, using a cyclical process.

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

STANDARD / COURSE		**Process Standards**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**5**	**Communicate about computing.**
GRADE LEVEL EXAMPLE / STAGE	5.a.	Select and use appropriate technological tools to convey solutions to computing problems.

STANDARD / COURSE		**Algorithms and Programming**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 1.**	**Design, evaluate, and modify simple algorithms (e.g., steps to make a sandwich; steps to a popular dance; steps for sending an email).**
PERFORMANCE DESCRIPTOR / STANDARD	7.AP.1.1.	Write sequences of instructions for others to perform tasks.
PERFORMANCE DESCRIPTOR / STANDARD	7.AP.1.2.	Suggest changes to the sequence of instructions that can lead to the same result (e.g., explore different ways to tying shoes).

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		**Impact of Computing**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 1.**	**Evaluate the tradeoffs of computing in everyday activities.**
PERFORMANCE DESCRIPTOR / STANDARD	7.IC.1.1.	Understand how computer science is and can be used to solve problems in students' daily lives (e.g., voter identification website, online tax filing).

STANDARD / COURSE		**Impact of Computing**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION	**Standard 6.**	**Explore computer science and computing-intensive careers.**
PERFORMANCE DESCRIPTOR / STANDARD	7.IC.6.1.	Explain how computer science plays a role in every industry.

South Carolina Standards & Learning
Technology Education
Grade **8** - Adopted: **2017**

STANDARD / COURSE		**Process Standards**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**3**	**Recognize, define, and analyze computational problems.**
GRADE LEVEL EXAMPLE / STAGE	3.a.	Recognize when it is appropriate to solve a problem computationally.
GRADE LEVEL EXAMPLE / STAGE	3.b.	Make sense of computational problems and persevere in solving them.
GRADE LEVEL EXAMPLE / STAGE	3.c.	Relate computational problems to prior knowledge.

GRADE LEVEL EXAMPLE / STAGE	3.d.	Recognize that there may be multiple approaches to solving a problem.
GRADE LEVEL EXAMPLE / STAGE	3.e.	Approach problem solving iteratively, using a cyclical process.
STANDARD / COURSE		**Process Standards**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**4**	**Create, test, and refine computational artifacts.**
GRADE LEVEL EXAMPLE / STAGE	4.b.	Recognize when to use the same solution for multiple problems.
GRADE LEVEL EXAMPLE / STAGE	4.c.	Test computational artifacts systematically by considering multiple scenarios and using test cases.
STANDARD / COURSE		**Process Standards**
KNOWLEDGE AND SKILLS / ESSENTIAL QUESTION		**A computer science literate student can:**
PERFORMANCE DESCRIPTOR / STANDARD	**5**	**Communicate about computing.**
GRADE LEVEL EXAMPLE / STAGE	5.a.	Select and use appropriate technological tools to convey solutions to computing problems.
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 1.**	**Design, evaluate, and modify simple algorithms (e.g., steps to make a sandwich; steps to a popular dance; steps for sending an email).**

PERFORMANCE DESCRIPTOR / STANDARD	8.AP.1.1.	Modify a sequence of instructions to solve problems.
PERFORMANCE DESCRIPTOR / STANDARD	8.AP.1.2.	Make changes to the sequence of instructions that can lead to the same result.
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.

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.

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.

South Dakota Content Standards

Science

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

GOAL/STRAND	SD.6-8.PSS.	Middle School Physical Science Standards
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.ESS.	Middle School Earth and Space Science Standards
INDICATOR/BENCHMARK	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. (SEP: 6; DCI: ESS3.A ; CCC: Cause/Effect , 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-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Technology, Nature Science/Consequence-Actions)

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.

GOAL/STRAND	SD.6-8.PSS.	Middle School Physical Science Standards
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.ESS.	Middle School Earth and Space Science Standards
INDICATOR/BENCHMARK	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. (SEP: 6; DCI: ESS3.A ; CCC: Cause/Effect , 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-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Technology, Nature Science/Consequence-Actions)

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.

South Dakota Content Standards

Technology Education

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

GOAL/STRAND	**SD.ET.**	**Educational Technology**
INDICATOR/BENCHMARK	**ET.CT.**	**Eighth Grade Critical Thinking, Problem Solving, and Decision Making**
STANDARD	**8.ET.CT.3.**	**Students evaluate and select technology tools based on the specific tasks.**
SUPPORTING SKILLS	8.ET.CT.3.1.	Develop, analyze, and integrate a repertoire of strategies to apply new technologies to tasks.

GOAL/STRAND	**SD.ET.**	**Educational Technology**
INDICATOR/BENCHMARK	**ET.OC.**	**Eighth Grade Technology Operations and Concepts**
STANDARD	**8.ET.OC.1.**	**Students interpret the history and progression of technology.**
SUPPORTING SKILLS	8.ET.OC.1.1.	Critique the progression of technology systems and peripherals to improve the user experience
SUPPORTING SKILLS	8.ET.OC.1.2.	Predict the effects that may result from society's increasing reliance on technology.

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.

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.

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

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

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Middle School: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	MS.PC.	Programming Concepts
LEARNING EXPECTATION	MS.PC.1.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

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

STRAND / STANDARD / COURSE		Tennessee K-12 Computer Science State Standards
CONCEPTUAL STRAND / GUIDING QUESTION		Middle School: Computer Science Standards
GUIDING QUESTION / LEARNING EXPECTATION	MS.PC.	Programming Concepts
LEARNING EXPECTATION	MS.PC.1.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

Texas Essential Knowledge and Skills (TEKS)

Mathematics

Grade **7** - Adopted: **2012**

TEKS	**111.27.**	**Grade 7, Adopted 2012.**
STUDENT EXPECTATION	**111.27.b.1.**	**Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:**
GRADE LEVEL EXPECTATION	111.27.b.1.B.	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
GRADE LEVEL EXPECTATION	111.27.b.1.C.	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
GRADE LEVEL EXPECTATION	111.27.b.1.F.	Analyze mathematical relationships to connect and communicate mathematical ideas.

Texas Essential Knowledge and Skills (TEKS)

Mathematics

Grade **8** - Adopted: **2012**

TEKS	**111.28.**	**Grade 8, Adopted 2012.**
STUDENT EXPECTATION	**111.28.b.1.**	**Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:**
GRADE LEVEL EXPECTATION	111.28.b.1.B.	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
GRADE LEVEL EXPECTATION	111.28.b.1.C.	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
GRADE LEVEL EXPECTATION	111.28.b.1.F.	Analyze mathematical relationships to connect and communicate mathematical ideas.

Texas Essential Knowledge and Skills (TEKS)

Science

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

TEKS	**§112.19**	**Science, Grade 7, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.**
STUDENT EXPECTATION	**§112.19.b**	**Knowledge and skills.**
GRADE LEVEL EXPECTATION	**§112.19.b.3**	**Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:**
INDICATOR	§112.19.b.3.A	analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
INDICATOR	§112.19.b.3.D	relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content

TEKS	**§112.19**	**Science, Grade 7, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.**
STUDENT EXPECTATION	**§112.19.b**	**Knowledge and skills.**

GRADE LEVEL EXPECTATION	**§112.19.b.4**	**Science investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:**
INDICATOR	§112.19.b.4.A	use appropriate tools, including life science models, hand lenses, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other necessary equipment to collect, record, and analyze information

Texas Essential Knowledge and Skills (TEKS)

Science

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

TEKS	**§112.20**	**Science, Grade 8, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.**
STUDENT EXPECTATION	**§112.20.b**	**Knowledge and skills.**
GRADE LEVEL EXPECTATION	**§112.20.b.3**	**Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:**
INDICATOR	§112.20.b.3.A	analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
INDICATOR	§112.20.b.3.D	relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content

TEKS	**§112.20**	**Science, Grade 8, Adopted 2017 – The provisions of §§112.18-112.20 of this subchapter shall be implemented by school districts beginning with the 2018-2019 school year.**
STUDENT EXPECTATION	**§112.20.b**	**Knowledge and skills.**
GRADE LEVEL EXPECTATION	**§112.20.b.4**	**Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:**
INDICATOR	§112.20.b.4.A	use appropriate tools, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectroscopes, timing devices, and other necessary equipment to collect, record, and analyze information

Texas Essential Knowledge and Skills (TEKS)

Technology Education

Grade **7** - Adopted: **2011**

TEKS	**§126.15.**	**Technology Applications, Grade 7**
STUDENT EXPECTATION	**§126.15.(4)**	**Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:**
GRADE LEVEL EXPECTATION	§126.15.(4)(A)	Identify and define relevant problems and significant questions for investigation.

Texas Essential Knowledge and Skills (TEKS)

Technology Education

Grade **8** - Adopted: **2011**

TEKS	**§126.16.**	**Technology Applications, Grade 8**
STUDENT EXPECTATION	**§126.16.(4)**	**Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:**

GRADE LEVEL EXPECTATION	§126.16. (4)(A)	Identify and define relevant problems and significant questions for investigation.

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.

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.

Utah Core Standards

Science

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 8.2:**	**ENERGY IS STORED AND TRANSFERRED IN PHYSICAL SYSTEMS**
INDICATOR / CLUSTER		**Objects can store and transfer energy within systems. Energy can be transferred between objects, which involves changes in the object's energy. There is a direct relationship between an object's energy, mass, and velocity. Energy can travel in waves and may be harnessed to transmit information.**

EXPECTATION / STANDARD	Standard 8.2.3	Engage in argument to identify the strongest evidence that supports the claim that the kinetic energy of an object changes as energy is transferred to or from the object. Examples could include observing temperature changes as a result of friction, applying force to an object, or releasing potential energy from an object.

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 8.4.2	Engage in argument supported by evidence about the effect of per-capita consumption of natural resources on Earth's systems. Emphasize that these resources are limited and may be non-renewable. Examples of evidence include rates of consumption of food and natural resources such as freshwater, minerals, and energy sources.
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.

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.

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

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Concepts**
INDICATOR / CLUSTER		**Algorithms and Programming (AP):**
EXPECTATION / STANDARD		An algorithm is a sequence of steps designed to accomplish a specific task. Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems. The development process to create meaningful and efficient programs involves choosing which information to use and how to process and store it, breaking apart large problems into smaller ones, recombining existing solutions, and analyzing different solutions.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Practices**
INDICATOR / CLUSTER	**Practice 1:**	**Fostering an Inclusive Computing Culture**
EXPECTATION / STANDARD		**By the end of Grade 12, students should be able to:**
INDICATOR	1	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.
INDICATOR	2	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Practices**
INDICATOR / CLUSTER	**Practice 2:**	**Collaborating Around Computing**
EXPECTATION / STANDARD		**By the end of Grade 12, students should be able to:**
INDICATOR	2	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

STANDARD / AREA OF LEARNING		Utah 6-12 Computer Science Standards
OBJECTIVE / STRAND		Core Practices
INDICATOR / CLUSTER	Practice 3:	Recognizing and Defining Computational Problems
EXPECTATION / STANDARD		By the end of Grade 12, students should be able to:
INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
INDICATOR	3	Evaluate whether it is appropriate and feasible to solve a problem computationally.

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.

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.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 Concepts**
INDICATOR / CLUSTER		**Algorithms and Programming (AP):**

EXPECTATION / STANDARD

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

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Practices**
INDICATOR / CLUSTER	**Practice 1:**	**Fostering an Inclusive Computing Culture**
EXPECTATION / STANDARD		**By the end of Grade 12, students should be able to:**
INDICATOR	1	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.
INDICATOR	2	Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Practices**
INDICATOR / CLUSTER	**Practice 2:**	**Collaborating Around Computing**
EXPECTATION / STANDARD		**By the end of Grade 12, students should be able to:**
INDICATOR	2	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

STANDARD / AREA OF LEARNING		**Utah 6-12 Computer Science Standards**
OBJECTIVE / STRAND		**Core Practices**
INDICATOR / CLUSTER	**Practice 3:**	**Recognizing and Defining Computational Problems**
EXPECTATION / STANDARD		**By the end of Grade 12, students should be able to:**
INDICATOR	2	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
INDICATOR	3	Evaluate whether it is appropriate and feasible to solve a problem computationally.

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.

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.

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.

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.

Vermont Content Standards

Science

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
GRADE LEVEL EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
GRADE LEVEL EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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-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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
GRADE LEVEL EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
GRADE LEVEL EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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.

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

Technology Education

Grade **7** - 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.

STANDARD / STRAND	**ISTE-S.5.**	**Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**

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

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

Virginia Standards of Learning

Mathematics

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

STRAND / TOPIC	**VA.PFA.8.**	**Patterns, Functions, and Algebra**
STANDARD / STRAND	**8.14.**	**The student will**
INDICATOR / STANDARD	8.14.b.	Simplify algebraic expressions in one variable.

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.b.	energy is transferred and transformed;
INDICATOR / STANDARD	PS.5.c.	energy can be transformed to meet societal needs.

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.b.	energy is transferred and transformed;
INDICATOR / STANDARD	PS.5.c.	energy can be transformed to meet societal needs.

Virginia Standards of Learning

Technology Education

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

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

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

STRAND / TOPIC		**Digital Learning Integration Standards of Learning for Virginia Public Schools**

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

STRAND / TOPIC		**Digital Learning Integration Standards of Learning for Virginia Public Schools**
STANDARD / STRAND	**CC.**	**Creative Communicator (CC)**
INDICATOR / STANDARD		**Students communicate clearly and express themselves creatively for a variety of purposes using appropriate technologies (including assistive technologies), styles, formats, and digital media appropriate to their goals.**
INDICATOR	**CC.B.**	**Create original works or responsibly repurpose or remix digital resources into new creations.**
PROGRESS INDICATOR	CC.B.m.	Students use appropriate technologies to create new digital works or responsibly repurpose or remix other digital works into new digital works.

STRAND / TOPIC		**Digital Learning Integration Standards of Learning for Virginia Public Schools**
STANDARD / STRAND	**GC.**	**Global Collaborator (GC)**
INDICATOR / STANDARD		**Students use appropriate technologies, including assistive technologies, to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
INDICATOR	**GC.D.**	**Explore local and global issues and use collaborative technologies to work with others to investigate solutions.**
PROGRESS INDICATOR	GC.D.m.	Students use collaborative technologies to work with others to understand problems, investigate and develop solutions related to local and global issues.

Virginia Standards of Learning

Technology Education

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

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

PROGRESS INDICATOR	CT.A.m.	Students create, identify, explore, and solve problems using technology-assisted methods such as data analysis, modeling, or algorithmic thinking.

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

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

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	**CC.**	**Creative Communicator (CC)**
INDICATOR / STANDARD		**Students communicate clearly and express themselves creatively for a variety of purposes using appropriate technologies (including assistive technologies), styles, formats, and digital media appropriate to their goals.**
INDICATOR	**CC.B.**	**Create original works or responsibly repurpose or remix digital resources into new creations.**
PROGRESS INDICATOR	CC.B.m.	Students use appropriate technologies to create new digital works or responsibly repurpose or remix other digital works into new digital works.

STRAND / TOPIC		Digital Learning Integration Standards of Learning for Virginia Public Schools
STANDARD / STRAND	**GC.**	**Global Collaborator (GC)**
INDICATOR / STANDARD		**Students use appropriate technologies, including assistive technologies, to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.**
INDICATOR	**GC.D.**	**Explore local and global issues and use collaborative technologies to work with others to investigate solutions.**
PROGRESS INDICATOR	GC.D.m.	Students use collaborative technologies to work with others to understand problems, investigate and develop solutions related to local and global issues.

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.

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.

Washington DC Academic Standards

Science

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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.

Washington DC Academic Standards

Science

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

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

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.

Washington State K-12 Learning Standards and Guidelines

Science

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

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-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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.

Washington State K-12 Learning Standards and Guidelines

Science

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

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

CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
CONTENT STANDARD / PERFORMANCE EXPECTATION	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
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	**6-8.3.**	**Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.**
CORE CONTENT / CONTENT STANDARD	6-8.3.d.	Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	**6-8.4.**	**Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**
CORE CONTENT / CONTENT STANDARD	6-8.4.a.	Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	**6-8.5.**	**Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**
CORE CONTENT / CONTENT STANDARD	6-8.5.a.	Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
CORE CONTENT / CONTENT STANDARD	6-8.5.d.	Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

EALR		Computer Science
BIG IDEA / CORE CONTENT		**Level 2: 6-8**

CORE CONTENT / CONTENT STANDARD	**2-CS.**	**Computing Systems**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-CS-01.	Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices. (P. 3.3)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-CS-03.	Systematically identify and fix problems with computing devices and their components. (P. 6.2)
EALR		**Computer Science**
BIG IDEA / CORE CONTENT		**Level 2: 6-8**
CORE CONTENT / CONTENT STANDARD	**2-AP.**	**Algorithms and Programming**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P. 4.4, 4.1)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P. 2.2)
EALR		**Computer Science**
BIG IDEA / CORE CONTENT		**Level 2: 6-8**
CORE CONTENT / CONTENT STANDARD	**2-IC.**	**Impacts of Computing**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P. 2.4, P. 5.2)

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	**6-8.3.**	**Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.**

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

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	**6-8.4.**	**Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**
CORE CONTENT / CONTENT STANDARD	6-8.4.a.	Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.

EALR	WA.ET.6-8.	Educational Technology Learning Standards
BIG IDEA / CORE CONTENT	**6-8.5.**	**Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**
CORE CONTENT / CONTENT STANDARD	6-8.5.a.	Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
CORE CONTENT / CONTENT STANDARD	6-8.5.d.	Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

EALR		Computer Science
BIG IDEA / CORE CONTENT		**Level 2: 6-8**
CORE CONTENT / CONTENT STANDARD	**2-CS.**	**Computing Systems**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-CS-01.	Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices. (P. 3.3)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-CS-03.	Systematically identify and fix problems with computing devices and their components. (P. 6.2)

EALR		Computer Science
BIG IDEA / CORE CONTENT		**Level 2: 6-8**

CORE CONTENT / CONTENT STANDARD	**2-AP.**	**Algorithms and Programming**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P. 4.4, 4.1)
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-AP-18.	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. (P. 2.2)
EALR		**Computer Science**
BIG IDEA / CORE CONTENT		**Level 2: 6-8**
CORE CONTENT / CONTENT STANDARD	**2-IC.**	**Impacts of Computing**
CONTENT STANDARD / PERFORMANCE EXPECTATION	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P. 2.4, P. 5.2)

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.

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.

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		Nature of Science
GRADE LEVEL EXPECTATION		Science is a creative human endeavor which is influenced by social and cultural biases.

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
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		**Earth and Space Science**
OBJECTIVE / EXPECTATION		**Earth's Systems**
GRADE LEVEL EXPECTATION	S.7.17.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
CONTENT STANDARD / COURSE		**Science – Grade 7**
CONTENT STANDARD / OBJECTIVE		**Earth and Space Science**
OBJECTIVE / EXPECTATION		**Human Impacts**

GRADE LEVEL EXPECTATION	S.7.21.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

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		**Nature of Science**
GRADE LEVEL EXPECTATION		Science is a creative human endeavor which is influenced by social and cultural biases.

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

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		**Earth and Space Science**
OBJECTIVE / EXPECTATION		**Human Impacts**
GRADE LEVEL EXPECTATION	S.8.17.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

CONTENT STANDARD / 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		**Computer Science 6-8**

OBJECTIVE / EXPECTATION		**Computer Systems and Computational Thinking**
GRADE LEVEL EXPECTATION	CS.6-8.1.	Analyze and devise problem-solving strategies cooperatively and collaboratively.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Computer Science 6-8**
OBJECTIVE / EXPECTATION		**Programming and Algorithms**
GRADE LEVEL EXPECTATION	CS.6-8.10.	Analyze the problem and use a tool (e.g., flow chart) to design an algorithm to solve complex problems.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Computer Systems and Computational Thinking**
GRADE LEVEL EXPECTATION	CS.DCS.1.	Use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, and evaluation).
GRADE LEVEL EXPECTATION	CS.DCS.3.	Define an algorithm as a sequence of instructions that can be processed by a computer.
GRADE LEVEL EXPECTATION	CS.DCS.5.	Act out searching and sorting algorithms.
GRADE LEVEL EXPECTATION	CS.DCS.9.	Interact with content-specific models and simulations (e.g., ecosystems, epidemics, molecular dynamics) to support learning and research.
GRADE LEVEL EXPECTATION	CS.DCS.10.	Evaluate what kinds of problems can be solved using modeling and simulation.
GRADE LEVEL EXPECTATION	CS.DCS.12.	Use abstraction to decompose a problem into sub problems.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Programming and Algorithms**
GRADE LEVEL EXPECTATION	CS.DCS.20.	Select appropriate tools and technology resources to accomplish a variety of tasks and solve problems.

GRADE LEVEL EXPECTATION	CS.DCS.23.	Demonstrate an understanding of algorithms and their practical application.
GRADE LEVEL EXPECTATION	CS.DCS.27.	Demonstrate characteristics used in open ended problem-solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge).
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Computers and Communications Devices**
GRADE LEVEL EXPECTATION	CS.DCS.36.	Describe ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).

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		**Computer Science 6-8**
OBJECTIVE / EXPECTATION		**Computer Systems and Computational Thinking**
GRADE LEVEL EXPECTATION	CS.6-8.1.	Analyze and devise problem-solving strategies cooperatively and collaboratively.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Computer Science 6-8**
OBJECTIVE / EXPECTATION		**Programming and Algorithms**
GRADE LEVEL EXPECTATION	CS.6-8.10.	Analyze the problem and use a tool (e.g., flow chart) to design an algorithm to solve complex problems.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Computer Systems and Computational Thinking**
GRADE LEVEL EXPECTATION	CS.DCS.1.	Use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, and evaluation).

GRADE LEVEL EXPECTATION	CS.DCS.3.	Define an algorithm as a sequence of instructions that can be processed by a computer.
GRADE LEVEL EXPECTATION	CS.DCS.5.	Act out searching and sorting algorithms.
GRADE LEVEL EXPECTATION	CS.DCS.9.	Interact with content-specific models and simulations (e.g., ecosystems, epidemics, molecular dynamics) to support learning and research.
GRADE LEVEL EXPECTATION	CS.DCS.10.	Evaluate what kinds of problems can be solved using modeling and simulation.
GRADE LEVEL EXPECTATION	CS.DCS.12.	Use abstraction to decompose a problem into sub problems.
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Programming and Algorithms**
GRADE LEVEL EXPECTATION	CS.DCS.20.	Select appropriate tools and technology resources to accomplish a variety of tasks and solve problems.
GRADE LEVEL EXPECTATION	CS.DCS.23.	Demonstrate an understanding of algorithms and their practical application.
GRADE LEVEL EXPECTATION	CS.DCS.27.	Demonstrate characteristics used in open ended problem-solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge).
CONTENT STANDARD / COURSE	**2520.14.**	**West Virginia College- and Career-Readiness Standards for Technology and Computer Science**
CONTENT STANDARD / OBJECTIVE		**Discovering Computer Science**
OBJECTIVE / EXPECTATION		**Computers and Communications Devices**
GRADE LEVEL EXPECTATION	CS.DCS.36.	Describe ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).

Wisconsin Academic Standards

Mathematics

Grade **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.

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.

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.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.ESS.**	**Disciplinary Core Idea: Earth and Space Sciences (ESS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.ESS 2.**	**Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's systems to make sense of phenomena and solve problems.**
DESCRIPTOR / FOCUS AREA	**SCI.ESS 2.A.**	**Earth Materials and Systems**
LEARNING CONTINUUM	SCI.ESS2 .A.m.	Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes.

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.A.**	**Natural Resources**
LEARNING CONTINUUM	SCI.ESS3 .A.m.	Humans depend on Earth's land, oceans, fresh water, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.

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

LEARNING CONTINUUM	SCI.ESS3.C.m.	Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.

DOMAIN	**WI.SCI.**	**Science**
CONTENT STANDARD	**SCI.ESS.**	**Disciplinary Core Idea: Earth and Space Sciences (ESS)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**SCI.ESS3.**	**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.ESS3.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.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.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.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.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.1.	All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.
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.SEP.	Science and Engineering Practices (SEP)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.SEP2.	Students develop and use models, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

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.ESS.	Disciplinary Core Idea: Earth and Space Sciences (ESS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ESS 2.	Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's systems to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ESS 2.A.	Earth Materials and Systems
LEARNING CONTINUUM	SCI.ESS2 .A.m.	Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes.

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.A.	Natural Resources
LEARNING CONTINUUM	SCI.ESS3 .A.m.	Humans depend on Earth's land, oceans, fresh water, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.ESS.	Disciplinary Core Idea: Earth and Space Sciences (ESS)
PERFORMANCE STANDARD / LEARNING PRIORITY	SCI.ESS 3.	Students use science and engineering practices, crosscutting concepts, and an understanding of the Earth and human activity to make sense of phenomena and solve problems.
DESCRIPTOR / FOCUS AREA	SCI.ESS 3.C.	Human Impacts on Earth Systems
LEARNING CONTINUUM	SCI.ESS3 .C.m.	Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.

DOMAIN	WI.SCI.	Science
CONTENT STANDARD	SCI.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.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.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.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.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.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.1.	All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.
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.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

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.AP1.**	**Students will recognize and define computational problems using algorithms and programming.**
DESCRIPTOR / FOCUS AREA	**CS.AP1.a.**	**Develop algorithms.**
LEARNING CONTINUUM	CS.AP1.a.6.m.	Decompose a computational problem into parts and create solutions for one or more parts.

DOMAIN	**WI.CS.**	**Computer Science**
CONTENT STANDARD	**CS.AP.**	**Content Area: Algorithms and Programming (AP)**
PERFORMANCE STANDARD / LEARNING PRIORITY	**CS.AP2.**	**Students will create computational artifacts using algorithms and programming.**
DESCRIPTOR / FOCUS AREA	**CS.AP2.a.**	**Develop and implement an artifact.**
LEARNING CONTINUUM	CS.AP2.a.6.m.	Develop programs, both independently and collaboratively, which include sequencing with nested loops and multiple branches [Clarification: At this level, students may use block-based and/or text-based languages].
LEARNING CONTINUUM	CS.AP2.a.8.m.	Use an iterative design process (e.g., define the problem, generate ideas, build, test, and improve solutions) to solve computational problems, both independently and collaboratively.

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

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP3.	Students will communicate about computing ideas.
DESCRIPTOR / FOCUS AREA	CS.AP3.c.	Document code.
LEARNING CONTINUUM	CS.AP3.c.1.m.	Interpret the flow of execution of algorithms and predict their outcomes. [Clarification: Algorithms can be expressed using natural language, flow and control diagrams, comments within code, and pseudocode.]

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.DA.	Content Area: Data and Analysis (DA)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.DA1.	Students will create computational artifacts using data and analysis.
DESCRIPTOR / FOCUS AREA	CS.DA1.a.	Represent and manipulate data.
LEARNING CONTINUUM	CS.DA1.a.3.m.	Represent data using different encoding schemes (e.g., binary, Unicode, Morse code, shorthand, student-created codes).

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.KC.	Content Area: Knowledge Constructor (KC)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.KC1.	Students critically curate a variety of digital tools and diverse resources.
DESCRIPTOR / FOCUS AREA	ITL.KC1.a.	Plan and employ effective research strategies.
LEARNING CONTINUUM	ITL.KC1.a.9.m.	Demonstrate and practice using an inquiry-based process that involves asking questions, investigating the answers, and developing new understandings for personal or academic learning activities.

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

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

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

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

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

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

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP2.	Students will create computational artifacts using algorithms and programming.
DESCRIPTOR / FOCUS AREA	CS.AP2.a.	Develop and implement an artifact.
LEARNING CONTINUUM	CS.AP2.a.6.m.	Develop programs, both independently and collaboratively, which include sequencing with nested loops and multiple branches [Clarification: At this level, students may use block-based and/or text-based languages].
LEARNING CONTINUUM	CS.AP2.a.8.m.	Use an iterative design process (e.g., define the problem, generate ideas, build, test, and improve solutions) to solve computational problems, both independently and collaboratively.

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

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.AP.	Content Area: Algorithms and Programming (AP)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.AP3.	Students will communicate about computing ideas.
DESCRIPTOR / FOCUS AREA	CS.AP3.c.	Document code.
LEARNING CONTINUUM	CS.AP3.c.1.m.	Interpret the flow of execution of algorithms and predict their outcomes. [Clarification: Algorithms can be expressed using natural language, flow and control diagrams, comments within code, and pseudocode.]

DOMAIN	WI.CS.	Computer Science
CONTENT STANDARD	CS.DA.	Content Area: Data and Analysis (DA)
PERFORMANCE STANDARD / LEARNING PRIORITY	CS.DA1.	Students will create computational artifacts using data and analysis.
DESCRIPTOR / FOCUS AREA	CS.DA1.a.	Represent and manipulate data.
LEARNING CONTINUUM	CS.DA1.a.3.m.	Represent data using different encoding schemes (e.g., binary, Unicode, Morse code, shorthand, student-created codes).

DOMAIN	WI.ITL.	Information and Technology Literacy
CONTENT STANDARD	ITL.KC.	Content Area: Knowledge Constructor (KC)
PERFORMANCE STANDARD / LEARNING PRIORITY	ITL.KC1.	Students critically curate a variety of digital tools and diverse resources.
DESCRIPTOR / FOCUS AREA	ITL.KC1.a.	Plan and employ effective research strategies.
LEARNING CONTINUUM	ITL.KC1.a.9.m.	Demonstrate and practice using an inquiry-based process that involves asking questions, investigating the answers, and developing new understandings for personal or academic learning activities.

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

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

LEARNING CONTINUUM	ITL.ID1.b. 3.m.	Demonstrate an ability to persevere through authentic, open-ended problems by applying abstract concepts with greater ambiguity.

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

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

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

Wyoming Content and Performance Standards

Mathematics

Grade **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.
CONTENT STANDARD		**The Number System**
BENCHMARK	**7.NS.B.**	**Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**
GRADE LEVEL EXAMPLE	**7.NS.B.2.**	**Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.**
EXPECTATION	7.NS.B.2 C.	Apply properties of multiplication (commutative, associative, distributive, or properties of identity and inverse elements) to multiply and divide 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.

Wyoming Content and Performance Standards

Science

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

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		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**

GRADE LEVEL EXAMPLE	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
GRADE LEVEL EXAMPLE	MS-ESS3-3.	Apply scientific principles to design a method for monitoring, evaluating, and managing a human impact on the environment.
GRADE LEVEL EXAMPLE	MS-ESS3-4.	Construct an argument supported by evidence for how changes in human population and per-capita consumption of natural resources impact Earth's systems.
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.
CONTENT STANDARD		**ENGINEERING DESIGN**
BENCHMARK	**MS-ETS2.**	**Engineering, Technology, Science and Society**
GRADE LEVEL EXAMPLE	MS-ETS2-2.	Develop a model defining and prioritizing the impacts of human activity on a particular aspect of the environment, identifying positive and negative consequences of the activity, both short and long-term, and investigate and explain how the ethics and integrity of scientists and engineers and respect for individual property rights might constrain future development.

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-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		**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**

GRADE LEVEL EXAMPLE	MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
GRADE LEVEL EXAMPLE	MS-ESS3-3.	Apply scientific principles to design a method for monitoring, evaluating, and managing a human impact on the environment.
GRADE LEVEL EXAMPLE	MS-ESS3-4.	Construct an argument supported by evidence for how changes in human population and per-capita consumption of natural resources impact Earth's systems.
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.
CONTENT STANDARD		**ENGINEERING DESIGN**
BENCHMARK	**MS-ETS2.**	**Engineering, Technology, Science and Society**
GRADE LEVEL EXAMPLE	MS-ETS2-2.	Develop a model defining and prioritizing the impacts of human activity on a particular aspect of the environment, identifying positive and negative consequences of the activity, both short and long-term, and investigate and explain how the ethics and integrity of scientists and engineers and respect for individual property rights might constrain future development.

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	3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.
EXPECTATION	3.3.	Evaluate whether it is appropriate and feasible to solve a problem computationally.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**Computer Science Practices**
GRADE LEVEL EXAMPLE	**4**	**Developing and Using Abstractions**
EXPECTATION	4.2.	Evaluate existing technological functionalities and incorporate them into new designs.
EXPECTATION	4.3.	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**Computer Science Practices**
GRADE LEVEL EXAMPLE	**5**	**Creating Computational Artifacts**
EXPECTATION	5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
EXPECTATION	5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**Computer Science Practices**
GRADE LEVEL EXAMPLE	**6**	**Testing and Refining Computational Artifact**
EXPECTATION	6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**MS Computer Science Standards**
GRADE LEVEL EXAMPLE	**CS.HS.**	**Hardware & Software**
EXPECTATION	8.CS.HS.01.	Design and refine a project that combines hardware and software components to collect and exchange data.

CONTENT STANDARD		Wyoming Computer Science Content Standards
BENCHMARK		MS Computer Science Standards
GRADE LEVEL EXAMPLE	AP.A.	Algorithms
EXPECTATION	8.AP.A.01.	Create flowcharts and pseudocode to design algorithms to solve complex problems.

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

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

EXPECTATION	4.2.	Evaluate existing technological functionalities and incorporate them into new designs.
EXPECTATION	4.3.	Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**Computer Science Practices**
GRADE LEVEL EXAMPLE	**5**	**Creating Computational Artifacts**
EXPECTATION	5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
EXPECTATION	5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**Computer Science Practices**
GRADE LEVEL EXAMPLE	**6**	**Testing and Refining Computational Artifact**
EXPECTATION	6.1.	Systematically test computational artifacts by considering all scenarios and using test cases.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**MS Computer Science Standards**
GRADE LEVEL EXAMPLE	**CS.HS.**	**Hardware & Software**
EXPECTATION	8.CS.HS.01.	Design and refine a project that combines hardware and software components to collect and exchange data.
CONTENT STANDARD		**Wyoming Computer Science Content Standards**
BENCHMARK		**MS Computer Science Standards**
GRADE LEVEL EXAMPLE	**AP.A.**	**Algorithms**
EXPECTATION	8.AP.A.01.	Create flowcharts and pseudocode to design algorithms to solve complex problems.
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.