Main Criteria: Forward Education

Secondary Criteria: Idaho Content Standards, Illinois Learning Standards, Indiana Academic Standards, Iowa Student Standards, Kansas Academic Standards, Kentucky Academic Standards, Louisiana Academic Standards, Maine Learning Results, Maryland College and Career-Ready Standards, Massachusetts Curriculum Frameworks, Michigan Academic Standards, Minnesota Academic Standards, Mississippi College & Career Readiness Standards, Missouri Learning Standards, Montana Content Standards

Subjects: Mathematics, Science, Technology Education

Grades: 7, 8

Forward Education

Harnessing the Sun's Energy with Solar Panels

Idaho Content Standards

Mathematics

Grade **7** - Adopted: **2022**

STANDARD / COURSE		Seventh Grade Standards for Mathematical Practice
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.1.	Make sense of problems and persevere in solving them.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.2.	Reason abstractly and quantitatively.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.3.	Construct viable arguments and critique the reasoning of others.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.4.	Model with mathematics.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.6.	Attend to precision.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.7.	Look for and make use of structure.

Idaho Content Standards

Mathematics

Grade **8** - Adopted: **2022**

STANDARD / COURSE		Eighth Grade Standards for Mathematical Practice
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.1.	Make sense of problems and persevere in solving them.

CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.2.	Reason abstractly and quantitatively.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.3.	Construct viable arguments and critique the reasoning of others.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.4.	Model with mathematics.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.6.	Attend to precision.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.7.	Look for and make use of structure.

Idaho Content Standards

Science

Grade **7** - Adopted: **2022**

STANDARD / COURSE	**MS-PS.**	**Physical Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**MS-PS-4.**	**Waves**
GLE / BIG IDEA	MS-PS-4.3.	Present qualitative scientific and technical information to support the claim that digitized signals (0s and 1s) can be used to encode and transmit information.

STANDARD / COURSE	**MS-ESS.**	**Earth and Space Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**MS-ESS-3.**	**Earth and Human Activity**
GLE / BIG IDEA	MS-ESS-3.1.	Construct a scientific explanation based on evidence for how Earth's mineral, energy, and groundwater resources are unevenly distributed as a result of past and current geologic processes.
GLE / BIG IDEA	MS-ESS-3.3.	Apply scientific practices to design a method for monitoring human activity and increasing beneficial human influences on the environment.
GLE / BIG IDEA	MS-ESS-3.4.	Construct an argument based on evidence for how changes in human population and per-capita consumption of natural resources positively and negatively affect Earth's systems.
GLE / BIG IDEA	MS-ESS-3.5.	Ask questions to interpret evidence of the factors that cause climate variability throughout Earth's history.

Idaho Content Standards

Science

Grade **8** - Adopted: **2022**

STANDARD / COURSE	**MS-PS.**	**Physical Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**MS-PS-4.**	**Waves**
GLE / BIG IDEA	MS-PS-4.3.	Present qualitative scientific and technical information to support the claim that digitized signals (0s and 1s) can be used to encode and transmit information.
STANDARD / COURSE	**MS-ESS.**	**Earth and Space Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**MS-ESS-3.**	**Earth and Human Activity**
GLE / BIG IDEA	MS-ESS-3.1.	Construct a scientific explanation based on evidence for how Earth's mineral, energy, and groundwater resources are unevenly distributed as a result of past and current geologic processes.
GLE / BIG IDEA	MS-ESS-3.3.	Apply scientific practices to design a method for monitoring human activity and increasing beneficial human influences on the environment.
GLE / BIG IDEA	MS-ESS-3.4.	Construct an argument based on evidence for how changes in human population and per-capita consumption of natural resources positively and negatively affect Earth's systems.
GLE / BIG IDEA	MS-ESS-3.5.	Ask questions to interpret evidence of the factors that cause climate variability throughout Earth's history.

Idaho Content Standards

Technology Education

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

STANDARD / COURSE	**ID.ICT.6-8.3.**	**STANDARD 3: KNOWLEDGE CONSTRUCTOR**
CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 3: 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.**
GLE / BIG IDEA	ICT.6-8.3.d.	Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.
STANDARD / COURSE	**ID.ICT.6-8.4.**	**STANDARD 4: INNOVATIVE DESIGNER**
CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 4: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**
GLE / BIG IDEA	ICT.6-8.4.b.	Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.
STANDARD / COURSE	**ID.ICT.6-8.5.**	**STANDARD 5: COMPUTATIONAL THINKER**

CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 5: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**
GLE / BIG IDEA	ICT.6-8.5.a.	Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
GLE / BIG IDEA	ICT.6-8.5.b.	Students find or organize data and use technology to analyze and represent it to solve problems and make decisions and trade-offs and to weigh risks.
GLE / BIG IDEA	ICT.6-8.5.c.	Students break problems into component parts, identify key pieces and use that information to problem solve.
GLE / BIG IDEA	ICT.6-8.5.d.	Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

STANDARD / COURSE	**ID.CS.6-8.**	**COMPUTER SCIENCE**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**6-8.AP.**	**Algorithms and Programming (AP)**
GLE / BIG IDEA		**Communicating About Computing**
OBJECTIVE	6-8.AP.02.	Compare different algorithms that may be used to solve the same problem by time and space efficiency. (Grades 6-8)

Idaho Content Standards

Technology Education

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

STANDARD / COURSE	**ID.ICT.6-8.3.**	**STANDARD 3: KNOWLEDGE CONSTRUCTOR**
CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 3: 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.**
GLE / BIG IDEA	ICT.6-8.3.d.	Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

STANDARD / COURSE	**ID.ICT.6-8.4.**	**STANDARD 4: INNOVATIVE DESIGNER**
CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 4: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.**
GLE / BIG IDEA	ICT.6-8.4.b.	Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.

STANDARD / COURSE	**ID.ICT.6-8.5.**	**STANDARD 5: COMPUTATIONAL THINKER**
CONTENT KNOWLEDGE AND SKILLS / GOAL		**Goal 5: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.**

GLE / BIG IDEA	ICT.6-8.5.a.	Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
GLE / BIG IDEA	ICT.6-8.5.b.	Students find or organize data and use technology to analyze and represent it to solve problems and make decisions and trade-offs and to weigh risks.
GLE / BIG IDEA	ICT.6-8.5.c.	Students break problems into component parts, identify key pieces and use that information to problem solve.
GLE / BIG IDEA	ICT.6-8.5.d.	Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.
STANDARD / COURSE	**ID.CS.6-8.**	**COMPUTER SCIENCE**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**6-8.AP.**	**Algorithms and Programming (AP)**
GLE / BIG IDEA		**Communicating About Computing**
OBJECTIVE	6-8.AP.02.	Compare different algorithms that may be used to solve the same problem by time and space efficiency. (Grades 6-8)

Illinois Learning Standards

Mathematics

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

STATE GOAL / DISCIPLINARY CONCEPT	**IL.K-12.MP.**	**Mathematical Practices**
LEARNING STANDARD / DISCIPLINE	K-12.MP.1.	Make sense of problems and persevere in solving them.
LEARNING STANDARD / DISCIPLINE	K-12.MP.2.	Reason abstractly and quantitatively.
LEARNING STANDARD / DISCIPLINE	K-12.MP.3.	Construct viable arguments and critique the reasoning of others.
LEARNING STANDARD / DISCIPLINE	K-12.MP.4.	Model with mathematics.
LEARNING STANDARD / DISCIPLINE	K-12.MP.6.	Attend to precision.
LEARNING STANDARD / DISCIPLINE	K-12.MP.7.	Look for and make use of structure.

Illinois Learning Standards

Mathematics

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

STATE GOAL / DISCIPLINARY CONCEPT	IL.K-12.MP.	Mathematical Practices
LEARNING STANDARD / DISCIPLINE	K-12.MP.1.	Make sense of problems and persevere in solving them.
LEARNING STANDARD / DISCIPLINE	K-12.MP.2.	Reason abstractly and quantitatively.
LEARNING STANDARD / DISCIPLINE	K-12.MP.3.	Construct viable arguments and critique the reasoning of others.
LEARNING STANDARD / DISCIPLINE	K-12.MP.4.	Model with mathematics.
LEARNING STANDARD / DISCIPLINE	K-12.MP.6.	Attend to precision.
LEARNING STANDARD / DISCIPLINE	K-12.MP.7.	Look for and make use of structure.

Illinois Learning Standards

Science

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

STATE GOAL / DISCIPLINARY CONCEPT	IL.MS-ESS.	EARTH AND SPACE SCIENCE
LEARNING STANDARD / DISCIPLINE	**MS-ESS3.**	**Earth and Human Activity**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**
STANDARD	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.
STANDARD	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
STANDARD	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
STANDARD	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.MS-ETS.**	**ENGINEERING DESIGN**
LEARNING STANDARD / DISCIPLINE	**MS-ETS1.**	**Engineering Design**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**
STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD	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**

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Key Ideas and Details**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
DESCRIPTOR / CONTENT DISCIPLINE	CC.6-8.RST.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Craft and Structure**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Integration of Knowledge and Ideas**

DESCRIPTOR / CONTENT DISCIPLINE	CC.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.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Range of Reading and Level of Text Complexity**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Text Types and Purposes**
DESCRIPTOR / CONTENT DISCIPLINE	**CC.6-8.WHST.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
STANDARD	CC.6-8.WHST.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Production and Distribution of Writing**
DESCRIPTOR / CONTENT DISCIPLINE	CC.6-8.WHST.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.

Illinois Learning Standards

Science

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

STATE GOAL / DISCIPLINARY CONCEPT	**IL.MS-ESS.**	**EARTH AND SPACE SCIENCE**
LEARNING STANDARD / DISCIPLINE	**MS-ESS3.**	**Earth and Human Activity**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**

STANDARD	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.
STANDARD	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
STANDARD	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
STANDARD	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.MS-ETS.**	**ENGINEERING DESIGN**
LEARNING STANDARD / DISCIPLINE	**MS-ETS1.**	**Engineering Design**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**
STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD	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**

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Key Ideas and Details**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
DESCRIPTOR / CONTENT DISCIPLINE	CC.6-8.RST.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Craft and Structure**

DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Integration of Knowledge and Ideas**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.RST.**	**Reading Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Range of Reading and Level of Text Complexity**
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Text Types and Purposes**
DESCRIPTOR / CONTENT DISCIPLINE	**CC.6-8.WHST.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
STANDARD	CC.6-8.WHST.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.
STATE GOAL / DISCIPLINARY CONCEPT	**IL.6-8.WHST.**	**Writing Standards for Literacy in Science and Technical Subjects**
LEARNING STANDARD / DISCIPLINE		**Production and Distribution of Writing**
DESCRIPTOR / CONTENT DISCIPLINE	CC.6-8.WHST.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
DESCRIPTOR / CONTENT DISCIPLINE	CC.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.

Illinois Learning Standards

Technology Education

Grade **7** - Adopted: **2022**

STATE GOAL / DISCIPLINARY CONCEPT		Illinois Computer Science Standards
LEARNING STANDARD / DISCIPLINE		**Computer Science Practices**
DESCRIPTOR / CONTENT DISCIPLINE	3	Recognizing and defining computational problems.
DESCRIPTOR / CONTENT DISCIPLINE	5	Creating computational artifacts.
DESCRIPTOR / CONTENT DISCIPLINE	6	Testing and refining computational artifacts.

STATE GOAL / DISCIPLINARY CONCEPT		Illinois Computer Science Standards
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.CS.**	**Computing Systems**
STANDARD		**Troubleshooting**
EXPECTATION	6-8.CS.03.	Systematically identify and fix problems with computing devices and their components.

STATE GOAL / DISCIPLINARY CONCEPT		Illinois Computer Science Standards
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.AP.**	**Algorithms and Programming**
STANDARD		**Algorithms**
EXPECTATION	6-8.AP.11.	Use flowcharts or pseudocode to address complex problems as algorithms.

STATE GOAL / DISCIPLINARY CONCEPT		Illinois Computer Science Standards
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**

DESCRIPTOR / CONTENT DISCIPLINE	**6-8.AP.**	**Algorithms and Programming**
STANDARD		**Modularity**
EXPECTATION	6-8.AP.14.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.IC.**	**Impacts of Computing**
STANDARD		**Social Interactions**
EXPECTATION	6-8.IC.23.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.ET.**	**Emerging and Future Technologies**
STANDARD	6-8.ET.E.	Create new or original work by applying emerging technologies.

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

STATE GOAL / DISCIPLINARY CONCEPT		**ISTE Standards for Students**
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

STATE GOAL / DISCIPLINARY CONCEPT		**ISTE Standards for Students**
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

STATE GOAL / DISCIPLINARY CONCEPT		**ISTE Standards for Students**
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	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.
DESCRIPTOR / CONTENT DISCIPLINE	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.
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Illinois Learning Standards
Technology Education
Grade **8** - Adopted: **2022**

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Practices**
DESCRIPTOR / CONTENT DISCIPLINE	3	Recognizing and defining computational problems.
DESCRIPTOR / CONTENT DISCIPLINE	5	Creating computational artifacts.
DESCRIPTOR / CONTENT DISCIPLINE	6	Testing and refining computational artifacts.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.CS.**	**Computing Systems**
STANDARD		**Troubleshooting**

EXPECTATION	6-8.CS.03.	Systematically identify and fix problems with computing devices and their components.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.AP.**	**Algorithms and Programming**
STANDARD		**Algorithms**
EXPECTATION	6-8.AP.11.	Use flowcharts or pseudocode to address complex problems as algorithms.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.AP.**	**Algorithms and Programming**
STANDARD		**Modularity**
EXPECTATION	6-8.AP.14.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.IC.**	**Impacts of Computing**
STANDARD		**Social Interactions**
EXPECTATION	6-8.IC.23.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**6-8.ET.**	**Emerging and Future Technologies**
STANDARD	6-8.ET.E.	Create new or original work by applying emerging technologies.

STATE GOAL / DISCIPLINARY CONCEPT		ISTE Standards for Students
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.3.d.	Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

STATE GOAL / DISCIPLINARY CONCEPT		ISTE Standards for Students
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.4.a.	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

STATE GOAL / DISCIPLINARY CONCEPT		ISTE Standards for Students
LEARNING STANDARD / DISCIPLINE	**IL.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.**
DESCRIPTOR / CONTENT DISCIPLINE	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.
DESCRIPTOR / CONTENT DISCIPLINE	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.
DESCRIPTOR / CONTENT DISCIPLINE	ISTE-S.5.d.	Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Indiana Academic Standards

Mathematics

Grade **7** - Adopted: **2023**

STANDARD / STRAND		Mathematics Process Standards
PROFICIENCY STATEMENT / SUBSTRAND	PS.1:	Make sense of problems and persevere in solving them.

PROFICIENCY STATEMENT / SUBSTRAND	PS.2:	Reason abstractly and quantitatively.
PROFICIENCY STATEMENT / SUBSTRAND	PS.3:	Construct viable arguments and critique the reasoning of others.
PROFICIENCY STATEMENT / SUBSTRAND	PS.4:	Model with mathematics.
PROFICIENCY STATEMENT / SUBSTRAND	PS.6:	Attend to precision.
PROFICIENCY STATEMENT / SUBSTRAND	PS.7:	Look for and make use of structure.
STANDARD / STRAND		**Grade 7 Mathematics**
PROFICIENCY STATEMENT / SUBSTRAND		**Algebra and Functions – Learning Outcome: Students use two variable equations, as well as graphs and tables, to model real-world proportional relationships and connect the constant of proportionality to the idea of slope.**
INDICATOR / STANDARD	7.AF.1.	Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring out a common number (e.g., given 2x - 10, create an equivalent expression 2(x - 5)). Justify each step in the process. (E)

Indiana Academic Standards

Mathematics

Grade **8** - Adopted: **2023**

STANDARD / STRAND		**Mathematics Process Standards**
PROFICIENCY STATEMENT / SUBSTRAND	PS.1:	Make sense of problems and persevere in solving them.
PROFICIENCY STATEMENT / SUBSTRAND	PS.2:	Reason abstractly and quantitatively.
PROFICIENCY STATEMENT / SUBSTRAND	PS.3:	Construct viable arguments and critique the reasoning of others.
PROFICIENCY STATEMENT / SUBSTRAND	PS.4:	Model with mathematics.
PROFICIENCY STATEMENT / SUBSTRAND	PS.6:	Attend to precision.

PROFICIENCY STATEMENT / SUBSTRAND	PS.7:	Look for and make use of structure.

Indiana Academic Standards

Science

Grade **7** - Adopted: **2023**

STANDARD / STRAND		**Science and Engineering Practices**
PROFICIENCY STATEMENT / SUBSTRAND	SEP.2.	Developing and using models
PROFICIENCY STATEMENT / SUBSTRAND	SEP.6.	Constructing explanations (for science) and designing solutions (for engineering)
PROFICIENCY STATEMENT / SUBSTRAND	SEP.8.	Obtaining, evaluating, and communicating information
STANDARD / STRAND		**Grade 7**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ESS3-1.**	**Earth and Human Activity**
INDICATOR / STANDARD	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.
STANDARD / STRAND		**Grade 7**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-1.**	**Engineering Design**
INDICATOR / STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
STANDARD / STRAND		**Grade 7**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-2.**	**Engineering Design**
INDICATOR / STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD / STRAND		**Grade 7**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-4.**	**Engineering Design**

INDICATOR / STANDARD	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.

Indiana Academic Standards

Science

Grade **8** - Adopted: **2023**

STANDARD / STRAND		**Science and Engineering Practices**
PROFICIENCY STATEMENT / SUBSTRAND	SEP.2.	Developing and using models
PROFICIENCY STATEMENT / SUBSTRAND	SEP.6.	Constructing explanations (for science) and designing solutions (for engineering)
PROFICIENCY STATEMENT / SUBSTRAND	SEP.8.	Obtaining, evaluating, and communicating information

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ESS3-3.**	**Earth and Human Activity**
INDICATOR / STANDARD	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ESS3-4.**	**Earth and Human Activity**
INDICATOR / STANDARD	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ESS3-5.**	**Earth and Human Activity**
INDICATOR / STANDARD	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over time.

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-1.**	**Engineering Design**

INDICATOR / STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-2.**	**Engineering Design**
INDICATOR / STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

STANDARD / STRAND		**Grade 8**
PROFICIENCY STATEMENT / SUBSTRAND	**MS-ETS1-4.**	**Engineering Design**
INDICATOR / STANDARD	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.

Indiana Academic Standards

Technology Education

Grade **7** - Adopted: **2023**

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Data & Information**
INDICATOR / STANDARD		**Learning Outcome: Students identify and implement multiple means of representing complex algorithms to communicate how applications store data as a representation understandable by people.**
EXPECTATION / INDICATOR	6-8.DI.1.	Decompose (i.e., break down) problems into smaller, more manageable subsets by applying the algorithmic problem solving steps to make the possible solutions easier to follow, test, and debug. (E)
EXPECTATION / INDICATOR	6-8.DI.4.	Create visuals such as flowcharts, diagrams, and pseudocode to represent complex problems as algorithms. (E)

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Computing Devices & Systems**
INDICATOR / STANDARD		**Learning Outcome: Students explain trade-offs, functionality, and accessibility of computer systems to improve the human-computer interaction.**
EXPECTATION / INDICATOR	6-8.CD.1.	Design projects that combine hardware and software components to collect and exchange data. (E)
EXPECTATION / INDICATOR	6-8.CD.2.	Systematically identify and fix problems (i.e., troubleshoot) with computing devices and their components (e.g., checklist, decision tree, flowchart).

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Impact & Culture**
INDICATOR / STANDARD		**Learning Outcome: Students explain that society is faced with trade-offs due to the increasing globalization and automation that computing brings, as well as describe these trade-offs using multiple viewpoints from a diverse audience.**
EXPECTATION / INDICATOR	6-8.IC.3.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

Indiana Academic Standards

Technology Education

Grade **8** - Adopted: **2023**

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Data & Information**
INDICATOR / STANDARD		**Learning Outcome: Students identify and implement multiple means of representing complex algorithms to communicate how applications store data as a representation understandable by people.**
EXPECTATION / INDICATOR	6-8.DI.1.	Decompose (i.e., break down) problems into smaller, more manageable subsets by applying the algorithmic problem solving steps to make the possible solutions easier to follow, test, and debug. (E)
EXPECTATION / INDICATOR	6-8.DI.4.	Create visuals such as flowcharts, diagrams, and pseudocode to represent complex problems as algorithms. (E)

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Computing Devices & Systems**
INDICATOR / STANDARD		**Learning Outcome: Students explain trade-offs, functionality, and accessibility of computer systems to improve the human-computer interaction.**
EXPECTATION / INDICATOR	6-8.CD.1.	Design projects that combine hardware and software components to collect and exchange data. (E)
EXPECTATION / INDICATOR	6-8.CD.2.	Systematically identify and fix problems (i.e., troubleshoot) with computing devices and their components (e.g., checklist, decision tree, flowchart).

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Impact & Culture**
INDICATOR / STANDARD		**Learning Outcome: Students explain that society is faced with trade-offs due to the increasing globalization and automation that computing brings, as well as describe these trade-offs using multiple viewpoints from a diverse audience.**
EXPECTATION / INDICATOR	6-8.IC.3.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

Iowa Student Standards

Mathematics

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

STRAND / COURSE		Mathematical Practices
ESSENTIAL CONCEPT AND/OR SKILL	1	Make sense of problems and persevere in solving them.
ESSENTIAL CONCEPT AND/OR SKILL	2	Reason abstractly and quantitatively.
ESSENTIAL CONCEPT AND/OR SKILL	3	Construct viable arguments and critique the reasoning of others.
ESSENTIAL CONCEPT AND/OR SKILL	4	Model with mathematics.
ESSENTIAL CONCEPT AND/OR SKILL	6	Attend to precision.
ESSENTIAL CONCEPT AND/OR SKILL	7	Look for and make use of structure.

Iowa Student Standards

Mathematics

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

STRAND / COURSE		Mathematical Practices
ESSENTIAL CONCEPT AND/OR SKILL	1	Make sense of problems and persevere in solving them.
ESSENTIAL CONCEPT AND/OR SKILL	2	Reason abstractly and quantitatively.
ESSENTIAL CONCEPT AND/OR SKILL	3	Construct viable arguments and critique the reasoning of others.
ESSENTIAL CONCEPT AND/OR SKILL	4	Model with mathematics.
ESSENTIAL CONCEPT AND/OR SKILL	6	Attend to precision.

ESSENTIAL CONCEPT AND/OR SKILL	7	Look for and make use of structure.

Iowa Student Standards

Science

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

STRAND / COURSE	IA.MS-ETS1.	Engineering Design
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**
DETAILED DESCRIPTOR	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.
DETAILED DESCRIPTOR	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
DETAILED DESCRIPTOR	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: **2016**

STRAND / COURSE	IA.CC.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL CONCEPT AND/OR SKILL		**Key Ideas and Details**
DETAILED DESCRIPTOR	RST.6-8.2.	Determine the central ideas or conclusions of a distinct from prior knowledge or opinions. (RST.6-8.2.)
DETAILED DESCRIPTOR	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (RST.6-8.3.)

STRAND / COURSE	IA.CC.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL CONCEPT AND/OR SKILL		**Craft and Structure**
DETAILED DESCRIPTOR	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. (RST.6-8.4.)
DETAILED DESCRIPTOR	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. (RST.6-8.5.)

STRAND / COURSE	IA.CC.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
ESSENTIAL CONCEPT AND/OR SKILL		**Integration of Knowledge and Ideas**

DETAILED DESCRIPTOR	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. (RST.6-8.9.)

STRAND / COURSE	**IA.CC.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Range of Reading and Level of Text Complexity**

DETAILED DESCRIPTOR	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. (RST.6-8.10.)

STRAND / COURSE	**IA.CC.WHST.6-8.**	**Writing Standards for Literacy Science, and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Text Types and Purposes**
DETAILED DESCRIPTOR	**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. (WHST.6-8.2.)

STRAND / COURSE	**IA.CC.WHST.6-8.**	**Writing Standards for Literacy Science, and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Production and Distribution of Writing**

DETAILED DESCRIPTOR	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (WHST.6-8.4.)

DETAILED DESCRIPTOR	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. (WHST.6-8.6.)

Iowa Student Standards

Science

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

STRAND / COURSE	**IA.MS-PS4.**	**Waves and Their Applications in Technologies for Information Transfer**
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**

DETAILED DESCRIPTOR	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.

STRAND / COURSE	**IA.MS-ESS3.**	**Earth and Human Activity**
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**

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

DETAILED DESCRIPTOR	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.
DETAILED DESCRIPTOR	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND / COURSE	**IA.MS-ETS1.**	**Engineering Design**
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**
DETAILED DESCRIPTOR	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.
DETAILED DESCRIPTOR	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
DETAILED DESCRIPTOR	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: **2016**

STRAND / COURSE	**IA.CC.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Key Ideas and Details**
DETAILED DESCRIPTOR	RST.6-8.2.	Determine the central ideas or conclusions of a distinct from prior knowledge or opinions. (RST.6-8.2.)
DETAILED DESCRIPTOR	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (RST.6-8.3.)
STRAND / COURSE	**IA.CC.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Craft and Structure**
DETAILED DESCRIPTOR	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. (RST.6-8.4.)
DETAILED DESCRIPTOR	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. (RST.6-8.5.)
STRAND / COURSE	**IA.CC.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Integration of Knowledge and Ideas**
DETAILED DESCRIPTOR	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. (RST.6-8.9.)

STRAND / COURSE	**IA.CC.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Range of Reading and Level of Text Complexity**
DETAILED DESCRIPTOR	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. (RST.6-8.10.)

STRAND / COURSE	**IA.CC.WHST.6-8.**	**Writing Standards for Literacy Science, and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Text Types and Purposes**
DETAILED DESCRIPTOR	**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. (WHST.6-8.2.)

STRAND / COURSE	**IA.CC.WHST.6-8.**	**Writing Standards for Literacy Science, and Technical Subjects**
ESSENTIAL CONCEPT AND/OR SKILL		**Production and Distribution of Writing**
DETAILED DESCRIPTOR	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (WHST.6-8.4.)
DETAILED DESCRIPTOR	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. (WHST.6-8.6.)

Iowa Student Standards

Technology Education

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

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**
GRADE LEVEL EXPECTATION		**Algorithms**
EXAMPLE	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**

GRADE LEVEL EXPECTATION		**Modularity**
EXAMPLE	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**
GRADE LEVEL EXPECTATION		**Program Development**
EXAMPLE	2-AP-15.	Seek and incorporate feedback from team members and users to refine a solution that meets user needs. (P2.3, P1.1)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-IC.**	**Impacts of Computing**
GRADE LEVEL EXPECTATION		**Social Interactions**
EXAMPLE	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P2.4, P5.2)

Iowa Student Standards
Technology Education
Grade **8** - Adopted: **2018**

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**
GRADE LEVEL EXPECTATION		**Algorithms**
EXAMPLE	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**

GRADE LEVEL EXPECTATION		**Modularity**
EXAMPLE	2-AP-13.	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. (P3.2)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-AP.**	**Algorithms & Programming**
GRADE LEVEL EXPECTATION		**Program Development**
EXAMPLE	2-AP-15.	Seek and incorporate feedback from team members and users to refine a solution that meets user needs. (P2.3, P1.1)

STRAND / COURSE		**CSTA K-12 Computer Science Standards**
ESSENTIAL CONCEPT AND/OR SKILL	**CSTA.2.**	**Level 2 (Ages 11-14)**
DETAILED DESCRIPTOR	**2-IC.**	**Impacts of Computing**
GRADE LEVEL EXPECTATION		**Social Interactions**
EXAMPLE	2-IC-22.	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact. (P2.4, P5.2)

Kansas Academic Standards

Mathematics

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

STANDARD	MP.	Standards for Mathematical Practice
BENCHMARK	MP.1.	Make sense of problems and persevere in solving them.
BENCHMARK	MP.2.	Reason abstractly and quantitatively.
BENCHMARK	MP.3.	Construct viable arguments and critique the reasoning of others.
BENCHMARK	MP.4.	Model with mathematics.
BENCHMARK	MP.6.	Attend to precision.
BENCHMARK	MP.7.	Look for and make use of structure.

Kansas Academic Standards

Mathematics

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

STANDARD	MP.	Standards for Mathematical Practice

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

Kansas Academic Standards

Science

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

STANDARD	KS.MS-ESS.	EARTH AND SPACE SCIENCE
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
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.
INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
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.
INDICATOR	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

STANDARD	KS.MS-ETS.	ENGINEERING DESIGN
BENCHMARK	**MS-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
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.
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.

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**

STANDARD	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Key Ideas and Details**
INDICATOR / PROFICIENCY LEVEL	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 / PROFICIENCY LEVEL	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STANDARD	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Craft and Structure**
INDICATOR / PROFICIENCY LEVEL	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 / PROFICIENCY LEVEL	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	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Integration of Knowledge and Ideas**
INDICATOR / PROFICIENCY LEVEL	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	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Range of Reading and Level of Text Complexity**
INDICATOR / PROFICIENCY LEVEL	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	**KS.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Text Types and Purposes**
INDICATOR / PROFICIENCY LEVEL	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STANDARD	**KS.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Production and Distribution of Writing**
INDICATOR / PROFICIENCY LEVEL	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
INDICATOR / PROFICIENCY LEVEL	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.

Kansas Academic Standards

Science

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

STANDARD	**KS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
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.
INDICATOR	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
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.
INDICATOR	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

STANDARD	**KS.MS-ETS.**	**ENGINEERING DESIGN**
BENCHMARK	**MS-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
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.
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.
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**

STANDARD	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Key Ideas and Details**
INDICATOR / PROFICIENCY LEVEL	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 / PROFICIENCY LEVEL	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

STANDARD	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Craft and Structure**
INDICATOR / PROFICIENCY LEVEL	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 / PROFICIENCY LEVEL	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	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Integration of Knowledge and Ideas**
INDICATOR / PROFICIENCY LEVEL	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	**KS.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Range of Reading and Level of Text Complexity**
INDICATOR / PROFICIENCY LEVEL	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	**KS.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Text Types and Purposes**
INDICATOR / PROFICIENCY LEVEL	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STANDARD	**KS.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
BENCHMARK		**Production and Distribution of Writing**

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

Kansas Academic Standards

Technology Education

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

STANDARD		**Computer Science Standards - Middle Grades**
BENCHMARK		**Algorithms and Programing**
INDICATOR / PROFICIENCY LEVEL		**Program Development**
INDICATOR	MG.AP.PD.01.	Seek and incorporate feedback from team members and users to refine a solution to a problem that meets the needs of diverse users.

STANDARD		**Computer Science Standards - Middle Grades**
BENCHMARK		**Impacts of Computing**
INDICATOR / PROFICIENCY LEVEL		**Community Partnerships**
INDICATOR	MG.IC.CP.01.	Formulate a computer-science based solution for a problem or issue by gathering input from local / regional industry members.

Kansas Academic Standards

Technology Education

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

STANDARD		**Computer Science Standards - Middle Grades**
BENCHMARK		**Algorithms and Programing**
INDICATOR / PROFICIENCY LEVEL		**Program Development**
INDICATOR	MG.AP.PD.01.	Seek and incorporate feedback from team members and users to refine a solution to a problem that meets the needs of diverse users.

STANDARD		**Computer Science Standards - Middle Grades**
BENCHMARK		**Impacts of Computing**
INDICATOR / PROFICIENCY LEVEL		**Community Partnerships**
INDICATOR	MG.IC.CP.01.	Formulate a computer-science based solution for a problem or issue by gathering input from local / regional industry members.

Kentucky Academic Standards

Mathematics

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

STRAND		Standards for Mathematical Practices
CATEGORY / GOAL	MP.1.	Make sense of problems and persevere in solving them.
CATEGORY / GOAL	MP.2.	Reason abstractly and quantitatively.
CATEGORY / GOAL	MP.3.	Construct viable arguments and critique the reasoning of others.
CATEGORY / GOAL	MP.4.	Model with mathematics.
CATEGORY / GOAL	MP.6.	Attend to precision.
CATEGORY / GOAL	MP.7.	Look for and make use of structure.

Kentucky Academic Standards

Mathematics

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

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

Kentucky Academic Standards

Science

Grade **7** - Adopted: **2022**

STRAND		6-8 Engineering Design

CATEGORY / GOAL	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.
CATEGORY / GOAL	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
CATEGORY / GOAL	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.

Kentucky Academic Standards

Science

Grade **8** - Adopted: **2022**

STRAND		Eighth Grade
CATEGORY / GOAL	8-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.
CATEGORY / GOAL	8-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
CATEGORY / GOAL	8-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.
CATEGORY / GOAL	8-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND		**6-8 Engineering Design**
CATEGORY / GOAL	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.
CATEGORY / GOAL	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
CATEGORY / GOAL	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.

Kentucky Academic Standards

Technology Education

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

STRAND		Technology – Middle
CATEGORY / GOAL		**Big Idea: Information, Communication and Productivity – Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.**
STANDARD / ORGANIZER		**Academic Expectations**
EXPECTATION	M.BI1.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Academic Expectations
EXPECTATION	M.BI3.AE.5.5.	Students use problem-solving processes to develop solutions to relatively complex problems.
EXPECTATION	M.BI3.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Middle Enduring Knowledge – Understandings
EXPECTATION	M.BI3.EK.2.	Technology supports critical thinking skills used in inquiry/problem solving to make informed decisions.
EXPECTATION	M.BI3.EK.4.	Technology is used to analyze real world data through inquiry/problem solving in order to produce results.
EXPECTATION	M.BI3.EK.5.	Technology problem solving strategies is applied to innovative design for authentic, creative and real-world applications.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Middle Skills and Concepts – Inquiry/Problem-solving
EXPECTATION	M.BI3.SC2.1.	Use appropriate technology and strategies to solve content-specific problems in the real-world.

Kentucky Academic Standards

Technology Education

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

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Information, Communication and Productivity – Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.
STANDARD / ORGANIZER		Academic Expectations
EXPECTATION	M.BI1.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Academic Expectations
EXPECTATION	M.BI3.AE.5.5.	Students use problem-solving processes to develop solutions to relatively complex problems.
EXPECTATION	M.BI3.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Middle Enduring Knowledge – Understandings
EXPECTATION	M.BI3.EK.2.	Technology supports critical thinking skills used in inquiry/problem solving to make informed decisions.
EXPECTATION	M.BI3.EK.4.	Technology is used to analyze real world data through inquiry/problem solving in order to produce results.
EXPECTATION	M.BI3.EK.5.	Technology problem solving strategies is applied to innovative design for authentic, creative and real-world applications.

STRAND		Technology – Middle
CATEGORY / GOAL		Big Idea: Research, Inquiry/Problem-Solving and Innovation – Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.
STANDARD / ORGANIZER		Middle Skills and Concepts – Inquiry/Problem-solving
EXPECTATION	M.BI3.SC2.1.	Use appropriate technology and strategies to solve content-specific problems in the real-world.

Louisiana Academic Standards

Mathematics

Grade **7** - Adopted: **2016/Updated 2017**

STRAND		Standards for Mathematical Practice
TITLE	MP.1.	Make sense of problems and persevere in solving them.
TITLE	MP.2.	Reason abstractly and quantitatively.
TITLE	MP.3.	Construct viable arguments and critique the reasoning of others.
TITLE	MP.4.	Model with mathematics.

TITLE	MP.6.	Attend to precision.
TITLE	MP.7.	Look for and make use of structure.

Louisiana Academic Standards
Mathematics
Grade **8** - Adopted: **2016/Updated 2017**

STRAND		Standards for Mathematical Practice
TITLE	MP.1.	Make sense of problems and persevere in solving them.
TITLE	MP.2.	Reason abstractly and quantitatively.
TITLE	MP.3.	Construct viable arguments and critique the reasoning of others.
TITLE	MP.4.	Model with mathematics.
TITLE	MP.6.	Attend to precision.
TITLE	MP.7.	Look for and make use of structure.

Louisiana Academic Standards
Science
Grade **7** - Adopted: **2017**

STRAND	LA.SC.7.	Science – Grade 7
TITLE	7-MS-ESS3.	EARTH AND HUMAN ACTIVITY
PERFORMANCE EXPECTATION	7-MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Louisiana Academic Standards
Science
Grade **8** - Adopted: **2017**

STRAND	LA.SC.8.	Science – Grade 8
TITLE	8-MS-ESS3.	EARTH AND HUMAN ACTIVITY
PERFORMANCE EXPECTATION	8-MS-ESS3-1.	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
PERFORMANCE EXPECTATION	8-MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.

Louisiana Academic Standards
Technology Education
Grade **7** - Adopted: **2008**

STRAND	LA.ET.	Educational Technology

TITLE		PreK-12 Educational Technology Content Standards
PERFORMANCE EXPECTATION	ET.4.	Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Louisiana Academic Standards

Technology Education

Grade **8** - Adopted: **2008**

STRAND	LA.ET.	Educational Technology
TITLE		PreK-12 Educational Technology Content Standards
PERFORMANCE EXPECTATION	ET.4.	Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Maine Learning Results

Mathematics

Grade **7** - Adopted: **2020/Implemented 2020**

STRAND / DOMAIN		Standards for Mathematical Practice
CATEGORY / PERFORMANCE INDICATOR	MP1.	Make sense of problems and persevere in solving them: Students will plan strategies to use and persevere in solving math problems.
CATEGORY / PERFORMANCE INDICATOR	MP2.	Reason abstractly and quantitatively: Students will think about numbers in many ways and make sense of numerical relationships as they solve problems.
CATEGORY / PERFORMANCE INDICATOR	MP3.	Construct viable arguments and critique the reasoning of others: Students will explain their thinking and make sense of the thinking of others.
CATEGORY / PERFORMANCE INDICATOR	MP4.	Model with mathematics: Students will use representations to show their thinking in a variety of ways.
CATEGORY / PERFORMANCE INDICATOR	MP6.	Attend to precision: Students will use precise mathematical language and check their work for accuracy.
CATEGORY / PERFORMANCE INDICATOR	MP7.	Look for and make use of structure: Students will use their current mathematical understandings to identify patterns and structure to make sense of new learning.
STRAND / DOMAIN		Algebraic Reasoning – Expressions and Equations
CATEGORY / PERFORMANCE INDICATOR	AR.EA.4	Use properties of operations to generate equivalent expressions.
STANDARD	7.EE.A.1:	Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. For example, 4x + 2 = 2(2x+1) and -3(x-5/3) = -3x +5

Maine Learning Results

Mathematics

Grade **8** - Adopted: **2020/Implemented 2020**

STRAND / DOMAIN		Standards for Mathematical Practice
CATEGORY / PERFORMANCE INDICATOR	MP1.	Make sense of problems and persevere in solving them: Students will plan strategies to use and persevere in solving math problems.
CATEGORY / PERFORMANCE INDICATOR	MP2.	Reason abstractly and quantitatively: Students will think about numbers in many ways and make sense of numerical relationships as they solve problems.
CATEGORY / PERFORMANCE INDICATOR	MP3.	Construct viable arguments and critique the reasoning of others: Students will explain their thinking and make sense of the thinking of others.
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CATEGORY / PERFORMANCE INDICATOR	MP6.	Attend to precision: Students will use precise mathematical language and check their work for accuracy.
CATEGORY / PERFORMANCE INDICATOR	MP7.	Look for and make use of structure: Students will use their current mathematical understandings to identify patterns and structure to make sense of new learning.

Maine Learning Results

Science

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

STRAND / DOMAIN	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
CATEGORY / PERFORMANCE INDICATOR	**MS-ESS3.**	**Earth and Human Activity**
STANDARD		**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.
STRAND / DOMAIN	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**

CATEGORY / PERFORMANCE INDICATOR	**MS-ETS1.**	**Engineering Design**
STANDARD		**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.

Maine Learning Results

Science

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

STRAND / DOMAIN	**NGSS.MS-ESS.**	**EARTH AND SPACE SCIENCE**
CATEGORY / PERFORMANCE INDICATOR	**MS-ESS3.**	**Earth and Human Activity**
STANDARD		**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.

STRAND / DOMAIN	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**
CATEGORY / PERFORMANCE INDICATOR	**MS-ETS1.**	**Engineering Design**
STANDARD		**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.

Maryland College and Career-Ready Standards

Science

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

STRAND / TOPIC / STANDARD	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
TOPIC / INDICATOR	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	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.
OBJECTIVE	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
OBJECTIVE	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.
OBJECTIVE	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND / TOPIC / STANDARD	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**
TOPIC / INDICATOR	**MS-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	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.
OBJECTIVE	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
OBJECTIVE	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.

Maryland College and Career-Ready Standards

Science

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

STRAND / TOPIC / STANDARD	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
TOPIC / INDICATOR	**MS-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**

OBJECTIVE	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.
OBJECTIVE	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
OBJECTIVE	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.
OBJECTIVE	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND / TOPIC / STANDARD	**NGSS.MS-ETS.**	**ENGINEERING DESIGN**
TOPIC / INDICATOR	**MS-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	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.
OBJECTIVE	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
OBJECTIVE	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.

Maryland College and Career-Ready Standards

Technology Education

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

STRAND / TOPIC / STANDARD		**Maryland Technology Education Standards: Grades 6-8**
TOPIC / INDICATOR		**Standard Three: Engineering Design and Development – Students will demonstrate knowledge of and apply the engineering design process to develop solutions to problems.**
INDICATOR / PROFICIENCY LEVEL		**Engineering design and development includes but is not limited to research and development, invention and innovation, problem solving, and using and maintaining technological products and systems.**
OBJECTIVE		**Explain how the design process is an iterative, systematic approach to problem solving that includes collaboratively:**
EXPECTATION		Defining a problem – students will be able to employ technical reading and writing skills to develop concise problem statement.
EXPECTATION		Selecting an Approach – students will be able to employ a decision matrix to select the best approach to solve the problem.
EXPECTATION		Testing and Evaluating Design Using Specifications – students will be able to use establish specifications to assess their design product.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Three: Engineering Design and Development – Students will demonstrate knowledge of and apply the engineering design process to develop solutions to problems.
INDICATOR / PROFICIENCY LEVEL		Engineering design and development includes but is not limited to research and development, invention and innovation, problem solving, and using and maintaining technological products and systems.
OBJECTIVE		Discriminate between ethical and unethical engineering practices.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Agricultural Technologies
EXPECTATION		Design, develop, use, manage, maintain, and assess a closed system that supports living organisms (e.g. terrarium, hydroponics station).

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Biotechnology
EXPECTATION		Explore applications of biotechnology.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Energy and Power Technologies

EXPECTATION		Analyze how power systems are used to drive and provide propulsion to other technological products and systems (STL, 16H).
EXPECTATION		Design, construct, and test a device that either minimizes or maximizes energy transfer (MS-PS3-3).
EXPECTATION		Explore ways to conserve energy.
EXPECTATION		Assess advantages and disadvantages of different forms of renewable and nonrenewable energy.
STRAND / TOPIC / STANDARD		**Maryland Technology Education Standards: Grades 6-8**
TOPIC / INDICATOR		**Standard Five: Computational Thinking and Computer Science Applications – Students will be able to apply computational thinking skills and computer science applications as tools to develop solutions to engineering problems.**
INDICATOR / PROFICIENCY LEVEL		Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.
INDICATOR / PROFICIENCY LEVEL		Use the basic steps in algorithmic problem solving to design solutions to problems.
INDICATOR / PROFICIENCY LEVEL		Implement problem solutions using a programming language.
INDICATOR / PROFICIENCY LEVEL		Analyze how computational thinking and computer programing can be used as tools for problem solving.

Maryland College and Career-Ready Standards

Technology Education

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

STRAND / TOPIC / STANDARD		**Maryland Technology Education Standards: Grades 6-8**
TOPIC / INDICATOR		**Standard Three: Engineering Design and Development – Students will demonstrate knowledge of and apply the engineering design process to develop solutions to problems.**
INDICATOR / PROFICIENCY LEVEL		**Engineering design and development includes but is not limited to research and development, invention and innovation, problem solving, and using and maintaining technological products and systems.**
OBJECTIVE		**Explain how the design process is an iterative, systematic approach to problem solving that includes collaboratively:**
EXPECTATION		Defining a problem – students will be able to employ technical reading and writing skills to develop concise problem statement.
EXPECTATION		Selecting an Approach – students will be able to employ a decision matrix to select the best approach to solve the problem.
EXPECTATION		Testing and Evaluating Design Using Specifications – students will be able to use establish specifications to assess their design product.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Three: Engineering Design and Development – Students will demonstrate knowledge of and apply the engineering design process to develop solutions to problems.
INDICATOR / PROFICIENCY LEVEL		Engineering design and development includes but is not limited to research and development, invention and innovation, problem solving, and using and maintaining technological products and systems.
OBJECTIVE		Discriminate between ethical and unethical engineering practices.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Agricultural Technologies
EXPECTATION		Design, develop, use, manage, maintain, and assess a closed system that supports living organisms (e.g. terrarium, hydroponics station).

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Biotechnology
EXPECTATION		Explore applications of biotechnology.

STRAND / TOPIC / STANDARD		Maryland Technology Education Standards: Grades 6-8
TOPIC / INDICATOR		Standard Four: Core Technologies and The Designed World – Students will demonstrate knowledge of the core technologies that underpin the designed world and major enterprises that produce the goods and services of the designed world. Core technologies include but are not limited to biotechnology, electrical, electronics, fluid, material, mechanical, optical, structural, and thermal technologies. Major enterprises include medical, agriculture, biotechnology, energy and power, information and communication, transportation, and manufacturing and construction technologies.
INDICATOR / PROFICIENCY LEVEL		Analyze the function of select core technologies in the designed world.
OBJECTIVE		Energy and Power Technologies

EXPECTATION		Analyze how power systems are used to drive and provide propulsion to other technological products and systems (STL, 16H).
EXPECTATION		Design, construct, and test a device that either minimizes or maximizes energy transfer (MS-PS3-3).
EXPECTATION		Explore ways to conserve energy.
EXPECTATION		Assess advantages and disadvantages of different forms of renewable and nonrenewable energy.
STRAND / TOPIC / STANDARD		**Maryland Technology Education Standards: Grades 6-8**
TOPIC / INDICATOR		**Standard Five: Computational Thinking and Computer Science Applications – Students will be able to apply computational thinking skills and computer science applications as tools to develop solutions to engineering problems.**
INDICATOR / PROFICIENCY LEVEL		Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.
INDICATOR / PROFICIENCY LEVEL		Use the basic steps in algorithmic problem solving to design solutions to problems.
INDICATOR / PROFICIENCY LEVEL		Implement problem solutions using a programming language.
INDICATOR / PROFICIENCY LEVEL		Analyze how computational thinking and computer programing can be used as tools for problem solving.

Massachusetts Curriculum Frameworks

Mathematics

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

FOCUS / COURSE	MA.MP.	Mathematical Practice
STRAND	MP.1.	Make sense of problems and persevere in solving them.
STRAND	MP.2.	Reason abstractly and quantitatively.
STRAND	MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND	MP.4.	Model with mathematics.
STRAND	MP.6.	Attend to precision.
STRAND	MP.7.	Look for and make use of structure.

Massachusetts Curriculum Frameworks

Mathematics

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

FOCUS / COURSE	MA.MP.	Mathematical Practice
STRAND	MP.1.	Make sense of problems and persevere in solving them.
STRAND	MP.2.	Reason abstractly and quantitatively.
STRAND	MP.3.	Construct viable arguments and critique the reasoning of others.
STRAND	MP.4.	Model with mathematics.
STRAND	MP.6.	Attend to precision.
STRAND	MP.7.	Look for and make use of structure.

Massachusetts Curriculum Frameworks

Science

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

FOCUS / COURSE	MA.7-ESS.	Grade 7: Earth and Space Sciences
STRAND	**ESS3.**	**Earth and Human Activity**
STANDARD / CONCEPT / SKILL	7.MS-ESS3-4.	Construct an argument supported by evidence that human activities and technologies can mitigate the impact of increases in human population and per capita consumption of natural resources on the environment.

FOCUS / COURSE	MA.7-PS.	Grade 7: Physical Science
STRAND	**PS3.**	**Energy**
STANDARD / CONCEPT / SKILL	7.MS-PS3-7(MA).	Use informational text to describe the relationship between kinetic and potential energy and illustrate conversions from one form to another.

FOCUS / COURSE	MA.7-ETS.	Grade 7: Technology/Engineering
STRAND	**ETS1.**	**Engineering Design**
STANDARD / CONCEPT / SKILL	7.MS-ETS1-2.	Evaluate competing solutions to a given design problem using a decision matrix to determine how well each meets the criteria and constraints of the problem. Use a model of each solution to evaluate how variations in one or more design features, including size, shape, weight, or cost, may affect the function or effectiveness of the solution.
STANDARD / CONCEPT / SKILL	7.MS-ETS1-4.	Generate and analyze data from iterative testing and modification of a proposed object, tool, or process to optimize the object, tool, or process for its intended purpose.
STANDARD / CONCEPT / SKILL	7.MS-ETS1-7(MA).	Construct a prototype of a solution to a given design problem.

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

FOCUS / COURSE	MA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STRAND		**Key Ideas and Details**
STANDARD / CONCEPT / 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.
STANDARD / CONCEPT / SKILL	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

FOCUS / COURSE	MA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STRAND		**Craft and Structure**
STANDARD / CONCEPT / 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.
STANDARD / CONCEPT / 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.

FOCUS / COURSE	MA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STRAND		**Integration of Knowledge and Ideas**
STANDARD / CONCEPT / 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.

FOCUS / COURSE	MA.RST.6-8.	Reading Standards for Literacy in Science and Technical Subjects
STRAND		**Range of Reading and Level of Text Complexity**
STANDARD / CONCEPT / 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.

FOCUS / COURSE	MA.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
STRAND		**Text Types and Purposes**
STANDARD / CONCEPT / SKILL	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

FOCUS / COURSE	MA.WHST.6-8.	Writing Standards for Literacy in Science and Technical Subjects
STRAND		**Production and Distribution of Writing**

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

Massachusetts Curriculum Frameworks

Science

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

FOCUS / COURSE	**MA.8-ESS.**	**Grade 8: Earth and Space Sciences**
STRAND	**ESS3.**	**Earth and Human Activity**
STANDARD / CONCEPT / SKILL	8.MS-ESS3-1.	Analyze and interpret data to explain that the Earth's mineral and fossil fuel resources are unevenly distributed as a result of geologic processes.
STANDARD / CONCEPT / SKILL	8.MS-ESS3-5.	Examine and interpret data to describe the role that human activities have played in causing the rise in global temperatures over the past century.

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

FOCUS / COURSE	**MA.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND		**Key Ideas and Details**
STANDARD / CONCEPT / 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.
STANDARD / CONCEPT / SKILL	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

FOCUS / COURSE	**MA.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND		**Craft and Structure**
STANDARD / CONCEPT / 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.
STANDARD / CONCEPT / 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.

FOCUS / COURSE	**MA.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND		**Integration of Knowledge and Ideas**

STANDARD / CONCEPT / 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.

FOCUS / COURSE	**MA.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STRAND		**Range of Reading and Level of Text Complexity**
STANDARD / CONCEPT / 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.

FOCUS / COURSE	**MA.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND		**Text Types and Purposes**
STANDARD / CONCEPT / SKILL	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

FOCUS / COURSE	**MA.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STRAND		**Production and Distribution of Writing**
STANDARD / CONCEPT / SKILL	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
STANDARD / CONCEPT / 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.

Massachusetts Curriculum Frameworks

Technology Education

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

FOCUS / COURSE	**MA.6-8.CAS.**	**Grades 6 – 8: Computing and Society (CAS)**
STRAND	**6-8.CAS.c.**	**Interpersonal and Societal Impact**
STANDARD / CONCEPT / SKILL	6-8.CAS.c.2.	Identify and discuss the technology proficiencies needed in the classroom and the workplace, and how to meet the needs.

FOCUS / COURSE	**MA.6-8.CT.**	**Grades 6 – 8: Computational Thinking (CT)**
STRAND	**6-8.CT.b.**	**Algorithms**
STANDARD / CONCEPT / SKILL	6-8.CT.b.3.	Individually and collaboratively decompose a problem and create a sub-solution for each of its parts (e.g., video game, robot obstacle course, making dinner).

FOCUS / COURSE	**MA.6-8.CT.**	**Grades 6 – 8: Computational Thinking (CT)**
STRAND	**6-8.CT.d.**	**Programming and Development**
STANDARD / CONCEPT / SKILL	6-8.CT.d.2.	Use functions to hide the detail in a program.
STANDARD / CONCEPT / SKILL	6-8.CT.d.3.	Create a program, individually and collaboratively, that implements an algorithm to achieve a given goal.
STANDARD / CONCEPT / SKILL	6-8.CT.d.5.	Trace programs step-by-step in order to predict their behavior.

Massachusetts Curriculum Frameworks

Technology Education

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

FOCUS / COURSE	**MA.6-8.CAS.**	**Grades 6 – 8: Computing and Society (CAS)**
STRAND	**6-8.CAS.c.**	**Interpersonal and Societal Impact**
STANDARD / CONCEPT / SKILL	6-8.CAS.c.2.	Identify and discuss the technology proficiencies needed in the classroom and the workplace, and how to meet the needs.

FOCUS / COURSE	**MA.6-8.CT.**	**Grades 6 – 8: Computational Thinking (CT)**
STRAND	**6-8.CT.b.**	**Algorithms**
STANDARD / CONCEPT / SKILL	6-8.CT.b.3.	Individually and collaboratively decompose a problem and create a sub-solution for each of its parts (e.g., video game, robot obstacle course, making dinner).

FOCUS / COURSE	**MA.6-8.CT.**	**Grades 6 – 8: Computational Thinking (CT)**
STRAND	**6-8.CT.d.**	**Programming and Development**
STANDARD / CONCEPT / SKILL	6-8.CT.d.2.	Use functions to hide the detail in a program.
STANDARD / CONCEPT / SKILL	6-8.CT.d.3.	Create a program, individually and collaboratively, that implements an algorithm to achieve a given goal.
STANDARD / CONCEPT / SKILL	6-8.CT.d.5.	Trace programs step-by-step in order to predict their behavior.

Michigan Academic Standards

Mathematics

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

STRAND / STANDARD CATEGORY	MI.CC.MP.7.	Mathematical Practices
STANDARD	MP.7.1.	Make sense of problems and persevere in solving them.
STANDARD	MP.7.2.	Reason abstractly and quantitatively.
STANDARD	MP.7.3.	Construct viable arguments and critique the reasoning of others.
STANDARD	MP.7.4.	Model with mathematics.
STANDARD	MP.7.6.	Attend to precision.
STANDARD	MP.7.7.	Look for and make use of structure.

Michigan Academic Standards

Mathematics

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

STRAND / STANDARD CATEGORY	MI.CC.MP.8.	Mathematical Practices
STANDARD	MP.8.1.	Make sense of problems and persevere in solving them.
STANDARD	MP.8.2.	Reason abstractly and quantitatively.
STANDARD	MP.8.3.	Construct viable arguments and critique the reasoning of others.
STANDARD	MP.8.4.	Model with mathematics.
STANDARD	MP.8.6.	Attend to precision.
STANDARD	MP.8.7.	Look for and make use of structure.

Michigan Academic Standards

Science

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

STRAND / STANDARD CATEGORY	MI.SC.5.	Waves and Electromagnetic Radiation
STANDARD	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.
STRAND / STANDARD CATEGORY	**MI.SC.15.**	**Earth's Systems**

STANDARD	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.
STRAND / STANDARD CATEGORY	**MI.SC.16.**	**Weather and Climate**
STANDARD	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND / STANDARD CATEGORY	**MI.SC.17.**	**Human Impacts**
STANDARD	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
STANDARD	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
STRAND / STANDARD CATEGORY	**MI.SC.18.**	**Engineering Design**
STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD	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**

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Key Ideas and Details**
GRADE LEVEL EXPECTATION	RST.6-8.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
GRADE LEVEL EXPECTATION	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Craft and Structure**
GRADE LEVEL EXPECTATION	RST.6-8.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

GRADE LEVEL EXPECTATION	RST.6-8.5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Integration of Knowledge and Ideas**

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

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Range of Reading and Level of Text Complexity**

GRADE LEVEL EXPECTATION	RST.6-8.10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

STRAND / STANDARD CATEGORY	**MI.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STANDARD		**Text Types and Purposes**
GRADE LEVEL EXPECTATION	**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.

STRAND / STANDARD CATEGORY	**MI.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STANDARD		**Production and Distribution of Writing**

GRADE LEVEL EXPECTATION	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

GRADE LEVEL EXPECTATION	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Michigan Academic Standards

Science

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

STRAND / STANDARD CATEGORY	**MI.SC.5.**	**Waves and Electromagnetic Radiation**

STANDARD	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.

STRAND / STANDARD CATEGORY	**MI.SC.15.**	**Earth's Systems**

STANDARD	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.
STRAND / STANDARD CATEGORY	**MI.SC.16.**	**Weather and Climate**
STANDARD	MS-ESS3-5.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
STRAND / STANDARD CATEGORY	**MI.SC.17.**	**Human Impacts**
STANDARD	MS-ESS3-3.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
STANDARD	MS-ESS3-4.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
STRAND / STANDARD CATEGORY	**MI.SC.18.**	**Engineering Design**
STANDARD	MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
STANDARD	MS-ETS1-2.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
STANDARD	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**

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Key Ideas and Details**
GRADE LEVEL EXPECTATION	RST.6-8.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
GRADE LEVEL EXPECTATION	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Craft and Structure**
GRADE LEVEL EXPECTATION	RST.6-8.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

GRADE LEVEL EXPECTATION	RST.6-8.5.	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Integration of Knowledge and Ideas**

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

STRAND / STANDARD CATEGORY	**MI.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
STANDARD		**Range of Reading and Level of Text Complexity**

GRADE LEVEL EXPECTATION	RST.6-8.10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

STRAND / STANDARD CATEGORY	**MI.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STANDARD		**Text Types and Purposes**
GRADE LEVEL EXPECTATION	**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.

STRAND / STANDARD CATEGORY	**MI.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
STANDARD		**Production and Distribution of Writing**

GRADE LEVEL EXPECTATION	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

GRADE LEVEL EXPECTATION	WHST.6-8.6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Michigan Academic Standards

Technology Education

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

STRAND / STANDARD CATEGORY	**MI.MITECS.**	**Michigan Integrated Technology Competencies for Students**
STANDARD	**MITECS.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.**

GRADE LEVEL EXPECTATION	MITECS.3.d.	Build knowledge by actively exploring realworld issues and problems, developing ideas and theories, and pursuing answers and solutions.

STRAND / STANDARD CATEGORY	MI.MITECS.	Michigan Integrated Technology Competencies for Students
STANDARD	**MITECS.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.**
GRADE LEVEL EXPECTATION	MITECS.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
GRADE LEVEL EXPECTATION	MITECS.4.c.	Develop, test, and refine prototypes as part of a cyclical design process.
GRADE LEVEL EXPECTATION	MITECS.4.d.	Exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

STRAND / STANDARD CATEGORY	MI.MITECS.	Michigan Integrated Technology Competencies for Students
STANDARD	**MITECS.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.**
GRADE LEVEL EXPECTATION	MITECS.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
GRADE LEVEL EXPECTATION	MITECS.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: **2019**

STRAND / STANDARD CATEGORY		Michigan Computer Science Standards
STANDARD		**LEVEL 2: MIDDLE SCHOOL (GRADES 6-8)**
GRADE LEVEL EXPECTATION		**ALGORITHMS AND PROGRAMMING**
EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. Subconcept: Algorithms; Practice 4.4, 4.1

Michigan Academic Standards

Technology Education

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

STRAND / STANDARD CATEGORY	MI.MITECS.	Michigan Integrated Technology Competencies for Students
STANDARD	**MITECS.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.**
GRADE LEVEL EXPECTATION	MITECS.3.d.	Build knowledge by actively exploring realworld issues and problems, developing ideas and theories, and pursuing answers and solutions.

STRAND / STANDARD CATEGORY	MI.MITECS.	Michigan Integrated Technology Competencies for Students
STANDARD	**MITECS.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.**

GRADE LEVEL EXPECTATION	MITECS.4.b.	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
GRADE LEVEL EXPECTATION	MITECS.4.c.	Develop, test, and refine prototypes as part of a cyclical design process.
GRADE LEVEL EXPECTATION	MITECS.4.d.	Exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.
STRAND / STANDARD CATEGORY	**MI.MITECS.**	**Michigan Integrated Technology Competencies for Students**
STANDARD	**MITECS.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.**
GRADE LEVEL EXPECTATION	MITECS.5.a.	Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
GRADE LEVEL EXPECTATION	MITECS.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: **2019**

STRAND / STANDARD CATEGORY		**Michigan Computer Science Standards**
STANDARD		**LEVEL 2: MIDDLE SCHOOL (GRADES 6-8)**
GRADE LEVEL EXPECTATION		**ALGORITHMS AND PROGRAMMING**
EXPECTATION	2-AP-10.	Use flowcharts and/or pseudocode to address complex problems as algorithms. Subconcept: Algorithms; Practice 4.4, 4.1

Minnesota Academic Standards

Mathematics

Grade **7** - Adopted: **2008**

CONTENT STANDARD / DOMAIN	**MN.7.2.**	**Algebra**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**7.2.3.**	**Apply understanding of order of operations and algebraic properties to generate equivalent numerical and algebraic expressions containing positive and negative rational numbers and grouping symbols; evaluate such expressions.**
INDICATORS OF PROGRESS / STRAND	7.2.3.1.	Use properties of algebra to generate equivalent numerical and algebraic expressions containing rational numbers, grouping symbols and whole number exponents. Properties of algebra include associative, commutative and distributive laws.

Minnesota Academic Standards

Science

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

CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**

PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Key Ideas and Details**
INDICATORS OF PROGRESS / STRAND	6.13.2.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
INDICATORS OF PROGRESS / STRAND	6.13.3.3.	Follow precisely a multistep procedure when carrying out experiments, designing solutions, taking measurements, or performing technical tasks.
CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Craft and Structure**
INDICATORS OF PROGRESS / STRAND	6.13.4.4.	Determine the meaning of symbols, equations, graphical representations, tabular representations, 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.
INDICATORS OF PROGRESS / STRAND	6.13.5.5.	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.
INDICATORS OF PROGRESS / STRAND	6.13.6.6.	Analyze the author's purpose in describing phenomena, providing an explanation, describing a procedure, or discussing/reporting an experiment in a text.
CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Integration of Knowledge and Ideas**
INDICATORS OF PROGRESS / STRAND	6.13.9.9.	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 / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Range of Reading and Level of Text Complexity**
INDICATORS OF PROGRESS / STRAND	6.13.10.10.	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 / DOMAIN	**MN.6.14.**	**Writing Benchmarks: Literacy in Science and Technical Subjects 6-12**

PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Text Types and Purposes**
INDICATORS OF PROGRESS / STRAND	**6.14.2.2.**	**Write informative/explanatory texts, as they apply to each discipline and reporting format, including the narration of historical events, of scientific procedures/ experiments, or description of technical processes.**
INDICATORS OF PROGRESS	6.14.2.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

CONTENT STANDARD / DOMAIN	**MN.6.14.**	**Writing Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Production and Distribution of Writing**
INDICATORS OF PROGRESS / STRAND	6.14.4.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Minnesota Academic Standards

Science

Grade **8** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.8.1.**	**The Nature of Science and Engineering**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**8.1.3.**	**Interactions Among Science, Technology, Engineering, Mathematics, and Society**
INDICATORS OF PROGRESS / STRAND	**8.1.3.3.**	**The student will understand that science and engineering operate in the context of society and both influence and are influenced by this context.**
INDICATORS OF PROGRESS	8.1.3.3.2.	Understand that scientific knowledge is always changing as new technologies and information enhance observations and analysis of data.
INDICATORS OF PROGRESS	8.1.3.3.3.	Provide examples of how advances in technology have impacted the ways in which people live, work and interact.

CONTENT STANDARD / DOMAIN	**MN.8.3.**	**Earth and Space Science**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**8.3.4.**	**Human Interactions with Earth Systems**
INDICATORS OF PROGRESS / STRAND	**8.3.4.1.**	**The student will understand that in order to maintain and improve their existence, humans interact with and influence Earth systems.**
INDICATORS OF PROGRESS	8.3.4.1.1.	Describe how mineral and fossil fuel resources have formed over millions of years, and explain why these resources are finite and non-renewable over human time frames.

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

CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Key Ideas and Details**
INDICATORS OF PROGRESS / STRAND	6.13.2.2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
INDICATORS OF PROGRESS / STRAND	6.13.3.3.	Follow precisely a multistep procedure when carrying out experiments, designing solutions, taking measurements, or performing technical tasks.

CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Craft and Structure**
INDICATORS OF PROGRESS / STRAND	6.13.4.4.	Determine the meaning of symbols, equations, graphical representations, tabular representations, 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.
INDICATORS OF PROGRESS / STRAND	6.13.5.5.	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.
INDICATORS OF PROGRESS / STRAND	6.13.6.6.	Analyze the author's purpose in describing phenomena, providing an explanation, describing a procedure, or discussing/reporting an experiment in a text.

CONTENT STANDARD / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Integration of Knowledge and Ideas**
INDICATORS OF PROGRESS / STRAND	6.13.9.9.	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 / DOMAIN	**MN.6.13.**	**Reading Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Range of Reading and Level of Text Complexity**
INDICATORS OF PROGRESS / STRAND	6.13.10.10.	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 / DOMAIN	**MN.6.14.**	**Writing Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Text Types and Purposes**
INDICATORS OF PROGRESS / STRAND	**6.14.2.2.**	**Write informative/explanatory texts, as they apply to each discipline and reporting format, including the narration of historical events, of scientific procedures/ experiments, or description of technical processes.**
INDICATORS OF PROGRESS	6.14.2.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.

CONTENT STANDARD / DOMAIN	**MN.6.14.**	**Writing Benchmarks: Literacy in Science and Technical Subjects 6-12**
PERFORMANCE INDICATOR / DOMAIN COMPONENT		**Production and Distribution of Writing**
INDICATORS OF PROGRESS / STRAND	6.14.4.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Minnesota Academic Standards

Technology Education

Grade **7** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.ITL.6-8.**	**Information and Technology Literacy Standards (Refresh 2009)**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**6-8.3.**	**Technology Use and Concepts: Students will explore multiple technologies, evaluate their suitability for the desired educational or personal task, and apply the tools needed.**
INDICATORS OF PROGRESS / STRAND	**6-8.3.I.**	**Use of Technology**
INDICATORS OF PROGRESS	**6-8.3.I.D.**	**Strategically solve information and technology issues.**
INDICATOR	6-8.3.I.D.1.	Independently troubleshoot technology issues, following organizational policies.
INDICATOR	6-8.3.I.D.2.	Locate assistance independently or through the help of others as needed.

Minnesota Academic Standards

Technology Education

Grade **8** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.ITL.6-8.**	**Information and Technology Literacy Standards (Refresh 2009)**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**6-8.3.**	**Technology Use and Concepts: Students will explore multiple technologies, evaluate their suitability for the desired educational or personal task, and apply the tools needed.**

INDICATORS OF PROGRESS / STRAND	6-8.3.I.	Use of Technology
INDICATORS OF PROGRESS	**6-8.3.I.D.**	**Strategically solve information and technology issues.**
INDICATOR	6-8.3.I.D.1.	Independently troubleshoot technology issues, following organizational policies.
INDICATOR	6-8.3.I.D.2.	Locate assistance independently or through the help of others as needed.

Mississippi College & Career Readiness Standards

Mathematics

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

THEME	MS.MP.	Standards for Mathematical Practice
SUBJECT	MP.1.	Make sense of problems and persevere in solving them.
SUBJECT	MP.2.	Reason abstractly and quantitatively.
SUBJECT	MP.3.	Construct viable arguments and critique the reasoning of others.
SUBJECT	MP.4.	Model with mathematics.
SUBJECT	MP.6.	Attend to precision.
SUBJECT	MP.7.	Look for and make use of structure.

Mississippi College & Career Readiness Standards

Mathematics

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

THEME	MS.MP.	Standards for Mathematical Practice
SUBJECT	MP.1.	Make sense of problems and persevere in solving them.
SUBJECT	MP.2.	Reason abstractly and quantitatively.
SUBJECT	MP.3.	Construct viable arguments and critique the reasoning of others.
SUBJECT	MP.4.	Model with mathematics.
SUBJECT	MP.6.	Attend to precision.
SUBJECT	MP.7.	Look for and make use of structure.

Mississippi College & Career Readiness Standards

Science

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

THEME	MS.L.7.	GRADE SEVEN: Life Science

SUBJECT		**Ecology and Interdependence**
STANDARD	**L.7.3.**	**Students will demonstrate an understanding of the importance that matter cycles between living and nonliving parts of the ecosystem to sustain life on Earth.**
OBJECTIVE	L.7.3.4.	Explain how disruptions in cycles (e.g., water, oxygen, carbon, and nitrogen) affect biodiversity and ecosystem services (e.g., water, food, and medications) which are needed to sustain human life on Earth.
OBJECTIVE	L.7.3.5.	Design solutions for sustaining the health of ecosystems to maintain biodiversity and the resources needed by humans for survival (e.g., water purification, nutrient recycling, prevention of soil erosion, and prevention or management of invasive species).
THEME	**MS.E.7.**	**GRADE SEVEN: Earth and Space Science**
SUBJECT		**Earth's Systems and Cycles**
STANDARD	**E.7.9B.**	**Students will demonstrate an understanding of the relationship between natural phenomena, human activity, and global climate change.**
OBJECTIVE	E.7.9B.1.	Read and evaluate scientific or technical information assessing the evidence and bias of each source to explain the causes and effects of climate change.
OBJECTIVE	E.7.9B.2.	Interpret data about the relationship between the release of carbon dioxide from burning fossil fuels into the atmosphere and the presence of greenhouse gases.
OBJECTIVE	E.7.9B.3.	Engage in scientific argument based on current evidence to determine whether climate change happens naturally or is being accelerated through the influence of man.

Mississippi College & Career Readiness Standards

Science

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

THEME	**MS.E.8.**	**GRADE EIGHT: Earth and Space Science**
SUBJECT		**Earth's Resources**
STANDARD	**E.8.10.**	**Students will demonstrate an understanding that a decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.**
OBJECTIVE	E.8.10.1.	Read and evaluate scientific information about advancements in renewable and nonrenewable resources. Propose and defend ways to decrease national and global dependency on nonrenewable resources.
OBJECTIVE	E.8.10.2.	Create and defend a proposal for reducing the environmental effects humans have on Earth (e.g., population increases, consumer demands, chemical pollution, deforestation, and change in average annual temperature).
OBJECTIVE	E.8.10.3.	Using scientific data, debate the societal advantages and disadvantages of technological advancements in renewable energy sources.
OBJECTIVE	E.8.10.4.	Using an engineering design process, develop a system to capture and distribute thermal energy that makes renewable energy more readily available and reduces human impact on the environment (e.g., building solar water heaters, conserving home energy).

Mississippi College & Career Readiness Standards

Technology Education

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

THEME		**Mississippi College- and Career-Readiness Standards for Computer Science**
SUBJECT		**Level 2: GRADES 6-8 - Algorithms and Programming**

STANDARD	**AP.2.**	**Algorithms and Programming (AP.2)**
OBJECTIVE	**AP.2.1.**	**Use flowcharts and/or pseudocode to address complex problems as algorithms. [ALGORITHMS] (P4.4, P4.1)**
OBJECTIVE	AP.2.1a.	Students will use pseudocode and/or flowcharts to organize and sequence an algorithm that addresses a complex problem, even though they may not actually program the solutions.

Mississippi College & Career Readiness Standards

Technology Education

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

THEME		**Mississippi College- and Career-Readiness Standards for Computer Science**
SUBJECT		**Level 2: GRADES 6-8 - Algorithms and Programming**
STANDARD	**AP.2.**	**Algorithms and Programming (AP.2)**
OBJECTIVE	**AP.2.1.**	**Use flowcharts and/or pseudocode to address complex problems as algorithms. [ALGORITHMS] (P4.4, P4.1)**
OBJECTIVE	AP.2.1a.	Students will use pseudocode and/or flowcharts to organize and sequence an algorithm that addresses a complex problem, even though they may not actually program the solutions.

Missouri Learning Standards

Science

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

STRAND: BIG IDEA / STANDARD	**MO.6-8.ESS.**	**Earth and Space Sciences**
CONCEPT: GLE / BENCHMARK	**6-8.ESS3.**	**Earth and Human Activity**
GLE / COMPONENT	**6-8.ESS3.A.**	**Natural Resources**
INDICATOR / PROFICIENCY	6-8.ESS3.A.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 and human activity. [Clarification Statement: Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).]

STRAND: BIG IDEA / STANDARD	**MO.6-8.ESS.**	**Earth and Space Sciences**
CONCEPT: GLE / BENCHMARK	**6-8.ESS3.**	**Earth and Human Activity**
GLE / COMPONENT	**6-8.ESS3.C.**	**Human Impacts on Earth's Systems**
INDICATOR / PROFICIENCY	6-8.ESS3.C.1.	Analyze data to define the relationship for how increases in human population and per-capita consumption of natural resources impact Earth's systems. [Clarification Statement: Examples of data include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change.]

INDICATOR / PROFICIENCY	6-8.ESS3.C.2.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]
STRAND: BIG IDEA / STANDARD	**MO.6-8.ETS.**	**Engineering, Technology, and Application of Science**
CONCEPT: GLE / BENCHMARK	**6-8.ETS1.**	**Engineering Design**
GLE / COMPONENT	**6-8.ETS1.A.**	**Defining and Delimiting Engineering Problems**
INDICATOR / PROFICIENCY	6-8.ETS1.A.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.
STRAND: BIG IDEA / STANDARD	**MO.6-8.ETS.**	**Engineering, Technology, and Application of Science**
CONCEPT: GLE / BENCHMARK	**6-8.ETS1.**	**Engineering Design**
GLE / COMPONENT	**6-8.ETS1.B.**	**Developing Possible Solutions**
INDICATOR / PROFICIENCY	6-8.ETS1.B.1.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
INDICATOR / PROFICIENCY	6-8.ETS1.B.3.	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**

STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Key Ideas and Details**
GLE / COMPONENT	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.
GLE / COMPONENT	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Craft and Structure**

GLE / COMPONENT	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.
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Integration of Knowledge and Ideas**
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Range of Reading and Level of Text Complexity**
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Text Types and Purposes**
GLE / COMPONENT	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR / PROFICIENCY	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.
STRAND: BIG IDEA / STANDARD	**MO.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Production and Distribution of Writing**
GLE / COMPONENT	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
GLE / COMPONENT	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.

Missouri Learning Standards

Science

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

STRAND: BIG IDEA / STANDARD	**MO.6-8.ESS.**	**Earth and Space Sciences**

CONCEPT: GLE / BENCHMARK	**6-8.ESS3.**	**Earth and Human Activity**
GLE / COMPONENT	**6-8.ESS3.A.**	**Natural Resources**
INDICATOR / PROFICIENCY	6-8.ESS3.A.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 and human activity. [Clarification Statement: Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).]
STRAND: BIG IDEA / STANDARD	**MO.6-8.ESS.**	**Earth and Space Sciences**
CONCEPT: GLE / BENCHMARK	**6-8.ESS3.**	**Earth and Human Activity**
GLE / COMPONENT	**6-8.ESS3.C.**	**Human Impacts on Earth's Systems**
INDICATOR / PROFICIENCY	6-8.ESS3.C.1.	Analyze data to define the relationship for how increases in human population and per-capita consumption of natural resources impact Earth's systems. [Clarification Statement: Examples of data include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change.]
INDICATOR / PROFICIENCY	6-8.ESS3.C.2.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]
STRAND: BIG IDEA / STANDARD	**MO.6-8.ETS.**	**Engineering, Technology, and Application of Science**
CONCEPT: GLE / BENCHMARK	**6-8.ETS1.**	**Engineering Design**
GLE / COMPONENT	**6-8.ETS1.A.**	**Defining and Delimiting Engineering Problems**
INDICATOR / PROFICIENCY	6-8.ETS1.A.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.
STRAND: BIG IDEA / STANDARD	**MO.6-8.ETS.**	**Engineering, Technology, and Application of Science**
CONCEPT: GLE / BENCHMARK	**6-8.ETS1.**	**Engineering Design**
GLE / COMPONENT	**6-8.ETS1.B.**	**Developing Possible Solutions**

INDICATOR / PROFICIENCY	6-8.ETS1.B.1.	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
INDICATOR / PROFICIENCY	6-8.ETS1.B.3.	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**

STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Key Ideas and Details**
GLE / COMPONENT	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.
GLE / COMPONENT	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Craft and Structure**
GLE / COMPONENT	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.
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Integration of Knowledge and Ideas**
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Range of Reading and Level of Text Complexity**
GLE / COMPONENT	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.
STRAND: BIG IDEA / STANDARD	**MO.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**

CONCEPT: GLE / BENCHMARK		**Text Types and Purposes**
GLE / COMPONENT	**WHST.6-8.2.**	**Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.**
INDICATOR / PROFICIENCY	WHST.6-8.2(d)	Use precise language and domain-specific vocabulary to inform about or explain the topic.

STRAND: BIG IDEA / STANDARD	**MO.WHST.6-8.**	**Writing Standards for Literacy in Science and Technical Subjects**
CONCEPT: GLE / BENCHMARK		**Production and Distribution of Writing**
GLE / COMPONENT	WHST.6-8.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
GLE / COMPONENT	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.

Missouri Learning Standards

Technology Education

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

STRAND: BIG IDEA / STANDARD		**Computer Science Performance Standards**
CONCEPT: GLE / BENCHMARK		**Algorithms & Programming**
GLE / COMPONENT		**Algorithms**
INDICATOR / PROFICIENCY	6-8.AP.A.01.	Design algorithms with flow charts and/or pseudocode to show solutions to complex problems.

Missouri Learning Standards

Technology Education

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

STRAND: BIG IDEA / STANDARD		**Computer Science Performance Standards**
CONCEPT: GLE / BENCHMARK		**Algorithms & Programming**
GLE / COMPONENT		**Algorithms**
INDICATOR / PROFICIENCY	6-8.AP.A.01.	Design algorithms with flow charts and/or pseudocode to show solutions to complex problems.

Montana Content Standards

Mathematics

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

CONTENT STANDARD / DOMAIN	MT.CC.MP.	Mathematical Practices
BENCHMARK / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
BENCHMARK / STANDARD	MP.2.	Reason abstractly and quantitatively.
BENCHMARK / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
BENCHMARK / STANDARD	MP.4.	Model with mathematics.
BENCHMARK / STANDARD	MP.6.	Attend to precision.
BENCHMARK / STANDARD	MP.7.	Look for and make use of structure.

Montana Content Standards

Mathematics

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

CONTENT STANDARD / DOMAIN	MT.CC.MP.	Mathematical Practices
BENCHMARK / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
BENCHMARK / STANDARD	MP.2.	Reason abstractly and quantitatively.
BENCHMARK / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
BENCHMARK / STANDARD	MP.4.	Model with mathematics.
BENCHMARK / STANDARD	MP.6.	Attend to precision.
BENCHMARK / STANDARD	MP.7.	Look for and make use of structure.

Montana Content Standards

Science

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

CONTENT STANDARD / DOMAIN	MT.6-8.ESS.	EARTH AND SPACE SCIENCE content standards for sixth through eighth grades are that students will:

BENCHMARK / STANDARD	6-8.ESS.9.	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
BENCHMARK / STANDARD	6-8.ESS.12.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century
BENCHMARK / STANDARD	6-8.ESS.14.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment
BENCHMARK / STANDARD	6-8.ESS.15.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems including indigenous populations

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

CONTENT STANDARD / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Key Ideas and Details**
GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CONTENT STANDARD / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Craft and Structure**
GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	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 / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Integration of Knowledge and Ideas**
GRADE LEVEL EXPECTATION / BENCHMARK	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 / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Range of Reading Level of Text Complexity**

GRADE LEVEL EXPECTATION / BENCHMARK	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 / DOMAIN	**MT.WHST.6-8.**	**Writing Standards for Literacy in Science, and Technical Subjects**
BENCHMARK / STANDARD		**Text Types and Purposes**
GRADE LEVEL EXPECTATION / BENCHMARK	**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 / DOMAIN	**MT.WHST.6-8.**	**Writing Standards for Literacy in Science, and Technical Subjects**
BENCHMARK / STANDARD		**Production and Distribution of Writing**
GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	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.

Montana Content Standards

Science

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

CONTENT STANDARD / DOMAIN	**MT.6-8.ESS.**	**EARTH AND SPACE SCIENCE content standards for sixth through eighth grades are that students will:**
BENCHMARK / STANDARD	6-8.ESS.9.	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
BENCHMARK / STANDARD	6-8.ESS.12.	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century
BENCHMARK / STANDARD	6-8.ESS.14.	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment
BENCHMARK / STANDARD	6-8.ESS.15.	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems including indigenous populations

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

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

GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	RST.6-8.3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
CONTENT STANDARD / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Craft and Structure**
GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	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 / DOMAIN	**MT.RST.6-8.**	**Reading Standards for Literacy in Science and Technical Subjects**
BENCHMARK / STANDARD		**Integration of Knowledge and Ideas**
GRADE LEVEL EXPECTATION / BENCHMARK	RST.6-8.9.	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
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EXPECTATION	WHST.6-8.2.d.	Use precise language and domain-specific vocabulary to inform about or explain the topic.
CONTENT STANDARD / DOMAIN	**MT.WHST.6-8.**	**Writing Standards for Literacy in Science, and Technical Subjects**

BENCHMARK / STANDARD		Production and Distribution of Writing
GRADE LEVEL EXPECTATION / BENCHMARK	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 / BENCHMARK	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.

Montana Content Standards

Technology Education

Grade **7** - Adopted: **2020/Effective 2021**

CONTENT STANDARD / DOMAIN		CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE
BENCHMARK / STANDARD	**(4)**	**The innovative designer content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(a)	select and use digital tools to support design processes, identify constraints and trade-offs and weigh risks;
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(b)	engage in design process to develop, test and revise prototypes or create innovative products; and

CONTENT STANDARD / DOMAIN		CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE
BENCHMARK / STANDARD	**(5)**	**The computational thinker content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(a)	investigate and practice solving problems by using data analysis, modeling or algorithmic thinking;
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(b)	organize data and use technology to display, analyze, solve problems and make decisions;
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(c)	break down problems into component parts, identify key pieces and use that information to problem solve; and

CONTENT STANDARD / DOMAIN		CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE
BENCHMARK / STANDARD	**(6)**	**The creative communicator content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(6)(a)	select appropriate platforms and tools to create, share, and communicate work;

GRADE LEVEL EXPECTATION / BENCHMARK	(6)(b)	create original works or responsibly remix and repurpose other digital resources into new creative works; and

CONTENT STANDARD / DOMAIN		**COMPUTER SCIENCE CONTENT STANDARDS FOR SIXTH THROUGH EIGHTH GRADE**
BENCHMARK / STANDARD	**(1)**	**Computer science algorithms and programming standards for sixth through eighth grades are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(1)(a)	use algorithms to address complex problems;
GRADE LEVEL EXPECTATION / BENCHMARK	(1)(c)	develop programs that combine control structures, including nested loops and compound conditionals;
GRADE LEVEL EXPECTATION / BENCHMARK	(1)(d)	decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs;
GRADE LEVEL EXPECTATION / BENCHMARK	(1)(f)	seek and incorporate feedback from team members and users to refine a solution that meets user needs;

CONTENT STANDARD / DOMAIN		**COMPUTER SCIENCE CONTENT STANDARDS FOR SIXTH THROUGH EIGHTH GRADE**
BENCHMARK / STANDARD	**(4)**	**Computer science impacts of computing standards for sixth through eighth grades are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(c)	collaborate with other contributors when creating a computational artifact; and

Montana Content Standards

Technology Education

Grade **8** - Adopted: **2020/Effective 2021**

CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE**
BENCHMARK / STANDARD	**(4)**	**The innovative designer content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(a)	select and use digital tools to support design processes, identify constraints and trade-offs and weigh risks;
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(b)	engage in design process to develop, test and revise prototypes or create innovative products; and

CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE**

BENCHMARK / STANDARD	**(5)**	**The computational thinker content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(a)	investigate and practice solving problems by using data analysis, modeling or algorithmic thinking;
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(b)	organize data and use technology to display, analyze, solve problems and make decisions;
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(c)	break down problems into component parts, identify key pieces and use that information to problem solve; and
CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR SIXTH THROUGH EIGHTH GRADE**
BENCHMARK / STANDARD	**(6)**	**The creative communicator content standards for sixth-eighth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(6)(a)	select appropriate platforms and tools to create, share, and communicate work;
GRADE LEVEL EXPECTATION / BENCHMARK	(6)(b)	create original works or responsibly remix and repurpose other digital resources into new creative works; and
CONTENT STANDARD / DOMAIN		**COMPUTER SCIENCE CONTENT STANDARDS FOR SIXTH THROUGH EIGHTH GRADE**
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