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: 5, 6, Key Stage 2

Forward Education

Smart Farming with Automated Watering

Idaho Content Standards

Mathematics

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

STANDARD / COURSE		Fifth 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.5.	Use appropriate tools strategically.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.7.	Look for and make use of structure.

STANDARD / COURSE	5.MD.	Measurement and Data
CONTENT KNOWLEDGE AND SKILLS / GOAL	**5.MD.B.**	**Represent and interpret data.**
GLE / BIG IDEA	**5.MD.B.2.**	**Collect, represent, and interpret numerical data, including whole numbers, and fractional and decimal values.**
OBJECTIVE	5.MD.B.2.a.	Interpret numerical data, with whole-number values, represented with tables or line plots.

OBJECTIVE	5.MD.B.2. b.	Use graphic displays of data (line plots (dot plots), tables, etc.) to solve real-world problems using fractional data.

Idaho Content Standards

Mathematics

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

STANDARD / COURSE		Sixth 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.5.	Use appropriate tools strategically.
CONTENT KNOWLEDGE AND SKILLS / GOAL	MP.7.	Look for and make use of structure.

STANDARD / COURSE	6.RP.	Ratios and Proportional Relationships
CONTENT KNOWLEDGE AND SKILLS / GOAL	**6.RP.A.**	**Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.**
GLE / BIG IDEA	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
OBJECTIVE	6.RP.A.3. a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STANDARD / COURSE	6.EE.	Expressions and Equations
CONTENT KNOWLEDGE AND SKILLS / GOAL	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities.**

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

Idaho Content Standards

Science

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

STANDARD / COURSE	**5-LS.**	**Life Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**5-LS-1.**	**From Molecules to Organisms: Structure and Processes**
GLE / BIG IDEA	5-LS-1.1.	Support an argument that plants get what they need for growth chiefly from air, water, and energy from the Sun.
STANDARD / COURSE	**5-LS.**	**Life Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**5-LS-2.**	**Biological Adaptation: Unity and Diversity**
GLE / BIG IDEA	5-LS-2.3.	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals living there may change.
STANDARD / COURSE	**5-ESS.**	**Earth and Space Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**5-ESS-3.**	**Earth and Human Activity**
GLE / BIG IDEA	5-ESS-3.1.	Obtain and combine information about ways communities protect Earth's resources and environment using scientific ideas.

Idaho Content Standards

Science

Grade **6** - 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-LS.**	**Life Science**
CONTENT KNOWLEDGE AND SKILLS / GOAL	**MS-LS-2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GLE / BIG IDEA	MS-LS-2.6.	Design and evaluate solutions for maintaining biodiversity and ecosystem services.

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-3.3.	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.

Idaho Content Standards

Technology Education

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

STANDARD / COURSE	ID.ICT.3-5.3.	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.3-5.3.d.	Students explore real-world problems and issues and collaborate with others to find answers or solutions.

STANDARD / COURSE	ID.ICT.3-5.5.	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.3-5.5.a.	Students explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking, with guidance from an educator.
GLE / BIG IDEA	ICT.3-5.5.c.	Students break down problems into smaller parts, identify key information, and propose solutions.
GLE / BIG IDEA	ICT.3-5.5.d.	Students understand and explore basic concepts related to automation, patterns and algorithmic thinking.

STANDARD / COURSE	ID.CS.3-5.	COMPUTER SCIENCE
CONTENT KNOWLEDGE AND SKILLS / GOAL	3-5.IC.	Impacts of Computing (IC)
GLE / BIG IDEA		Fostering an Inclusive Computing Culture
OBJECTIVE	3-5.IC.02.	Explore the connections between computer science and other fields. (Grades 3-5)

STANDARD / COURSE	ID.CS.3-5.	COMPUTER SCIENCE
CONTENT KNOWLEDGE AND SKILLS / GOAL	3-5.AP.	Algorithms and Programming (AP)
GLE / BIG IDEA		Creating Computational Artifacts
OBJECTIVE	3-5.AP.02.	Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5)

STANDARD / COURSE	ID.CS.3-5.	COMPUTER SCIENCE
CONTENT KNOWLEDGE AND SKILLS / GOAL	3-5.AP.	Algorithms and Programming (AP)
GLE / BIG IDEA		Testing and Refining Computational Artifacts
OBJECTIVE	3-5.AP.05.	Understand, explain and debug the sequencing in an algorithm. (Grades 3-5)

STANDARD / COURSE	ID.CS.3-5.	COMPUTER SCIENCE
CONTENT KNOWLEDGE AND SKILLS / GOAL	3-5.AP.	Algorithms and Programming (AP)
GLE / BIG IDEA		Creating Computational Artifacts
OBJECTIVE	3-5.AP.06.	Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5)

STANDARD / COURSE	ID.CS.3-5.	COMPUTER SCIENCE
CONTENT KNOWLEDGE AND SKILLS / GOAL	3-5.AP.	Algorithms and Programming (AP)
GLE / BIG IDEA		Developing and Using Abstractions
OBJECTIVE	3-5.AP.07.	Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)

Idaho Content Standards

Technology Education

Grade **6** - 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.
GLE / BIG IDEA	ICT.6-8.4.d.	Students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.
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 **5** - 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.5.	Use appropriate tools strategically.
LEARNING STANDARD / DISCIPLINE	K-12.MP.7.	Look for and make use of structure.

Illinois Learning Standards

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
LEARNING STANDARD / DISCIPLINE	K-12.MP.7.	Look for and make use of structure.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6.RP.**	**Ratios and Proportional Relationships**
LEARNING STANDARD / DISCIPLINE		**Understand ratio concepts and use ratio reasoning to solve problems.**
DESCRIPTOR / CONTENT DISCIPLINE	**CC.6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
STANDARD	CC.6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.6.EE.**	**Expressions and Equations**
LEARNING STANDARD / DISCIPLINE		**Reason about and solve one-variable equations and inequalities.**
DESCRIPTOR / CONTENT DISCIPLINE	CC.6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Illinois Learning Standards

Science

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

STATE GOAL / DISCIPLINARY CONCEPT	**IL.5-LS.**	**LIFE SCIENCE**
LEARNING STANDARD / DISCIPLINE	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**
STANDARD	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.5-ESS.**	**EARTH AND SPACE SCIENCE**
LEARNING STANDARD / DISCIPLINE	**5-ESS3.**	**Earth and Human Activity**
DESCRIPTOR / CONTENT DISCIPLINE		**Students who demonstrate understanding can:**
STANDARD	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STATE GOAL / DISCIPLINARY CONCEPT	**IL.3-5-ETS.**	**ENGINEERING DESIGN**
LEARNING STANDARD / DISCIPLINE	**3-5-ETS1.**	**Engineering Design**

DESCRIPTOR / CONTENT DISCIPLINE		Students who demonstrate understanding can:
STANDARD	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
STANDARD	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
STANDARD	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Illinois Learning Standards

Science

Grade **6** - Adopted: **2014**

STATE GOAL / DISCIPLINARY CONCEPT	IL.MS-LS.	LIFE SCIENCE
LEARNING STANDARD / DISCIPLINE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics
DESCRIPTOR / CONTENT DISCIPLINE		Students who demonstrate understanding can:
STANDARD	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

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-ESS3-3.	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.

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 **6** - 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.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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 **5** - 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	**3-5.CS.**	**Computing Systems**
STANDARD		**Troubleshooting**
EXPECTATION	3-5.CS.03.	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**3-5.DA.**	**Data and Analysis**
STANDARD		**Interference and Models**
EXPECTATION	3-5.DA.07.	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**3-5.AP.**	**Algorithms and Programming**
STANDARD		**Algorithms**
EXPECTATION	3-5.AP.08.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**
LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**3-5.AP.**	**Algorithms and Programming**
STANDARD		**Modularity**
EXPECTATION	3-5.AP.11.	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.

STATE GOAL / DISCIPLINARY CONCEPT		**Illinois Computer Science Standards**

LEARNING STANDARD / DISCIPLINE		**Computer Science Standards**
DESCRIPTOR / CONTENT DISCIPLINE	**3-5.ET.**	**Emerging and Future Technologies**
STANDARD	3-5.ET.E.	Create new or original work by applying emerging technologies.

Grade **5** - 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 **6** - 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 **6** - 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.

Indiana Academic Standards

Mathematics

Grade **5** - 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.5:	Use appropriate tools strategically.
PROFICIENCY STATEMENT / SUBSTRAND	PS.7:	Look for and make use of structure.

Indiana Academic Standards

Mathematics

Grade **6** - 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.5:	Use appropriate tools strategically.
PROFICIENCY STATEMENT / SUBSTRAND	PS.7:	Look for and make use of structure.
STANDARD / STRAND		**Grade 6 Mathematics**
PROFICIENCY STATEMENT / SUBSTRAND		**Ratios and Proportional Reasoning – Learning Outcome: Students use ratios and reasoning to compare two quantities and understand unit rate. Students use ratios and unit rates to model and solve real-world problems.**
INDICATOR / STANDARD	6.RP.3.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.
INDICATOR / STANDARD	6.RP.4.	Solve real-world and other mathematical problems involving rates and ratios using models and strategies such as reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (E)

Indiana Academic Standards

Science

Grade **5** - Adopted: **2023**

STANDARD / STRAND		**Science and Engineering Practices**
PROFICIENCY STATEMENT / SUBSTRAND	SEP.2.	Developing and using models
PROFICIENCY STATEMENT / SUBSTRAND	SEP.3.	Planning and carrying out investigations
PROFICIENCY STATEMENT / SUBSTRAND	SEP.4.	Analyzing and interpreting data

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 5**
PROFICIENCY STATEMENT / SUBSTRAND	**5-LS1-1.**	**From Molecules to Organisms: Structures and Processes**
INDICATOR / STANDARD	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
STANDARD / STRAND		**Grade 5**
PROFICIENCY STATEMENT / SUBSTRAND	**5-ESS3-1.**	**Earth and Human Activity**
INDICATOR / STANDARD	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
STANDARD / STRAND		**Grade 5**
PROFICIENCY STATEMENT / SUBSTRAND	**3-5-ETS1-1.**	**Engineering Design**
INDICATOR / STANDARD	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
STANDARD / STRAND		**Grade 5**
PROFICIENCY STATEMENT / SUBSTRAND	**3-5-ETS1-2.**	**Engineering Design**
INDICATOR / STANDARD	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
STANDARD / STRAND		**Grade 5**
PROFICIENCY STATEMENT / SUBSTRAND	**3-5-ETS1-3.**	**Engineering Design**
INDICATOR / STANDARD	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

STANDARD / STRAND		Science and Engineering Practices
PROFICIENCY STATEMENT / SUBSTRAND	SEP.2.	Developing and using models
PROFICIENCY STATEMENT / SUBSTRAND	SEP.3.	Planning and carrying out investigations
PROFICIENCY STATEMENT / SUBSTRAND	SEP.4.	Analyzing and interpreting data
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 6
PROFICIENCY STATEMENT / SUBSTRAND	**MS-LS2-5.**	**Ecosystems: Interactions, Energy, and Dynamics**
INDICATOR / STANDARD	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

STANDARD / STRAND		Grade 6
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 6
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 6
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 **5** - Adopted: **2023**

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Data & Information**
INDICATOR / STANDARD		**Learning Outcome: Students select aspects and portions of data to be transformed, clustered, and categorized to provide views and insights about the data.**
EXPECTATION / INDICATOR	3-5.DI.1.	Decompose problems and subproblems into parts as a means to solving complex problems. (E)

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Computing Devices & Systems**
INDICATOR / STANDARD		**Learning Outcome: Students identify similarities between computing systems to troubleshoot common problems and choose appropriate combinations of hardware and software to accomplish desired tasks.**
EXPECTATION / INDICATOR	3-5.CD.2.	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. (E)

STANDARD / STRAND		**Computer Science**
PROFICIENCY STATEMENT / SUBSTRAND		**Programs & Algorithms**
INDICATOR / STANDARD		**Learning Outcome: Students collaboratively engage in computer program development with consideration of documenting design choices and giving appropriate attributions.**
EXPECTATION / INDICATOR	3-5.PA.1.	Collaborate with peers to implement problem-solving steps to create a variety of programming solutions. (E)

Indiana Academic Standards

Technology Education

Grade **6** - 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 **5** - 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	5	Use appropriate tools strategically.

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

Iowa Student Standards

Mathematics

Grade **6** - 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	5	Use appropriate tools strategically.
ESSENTIAL CONCEPT AND/OR SKILL	7	Look for and make use of structure.

STRAND / COURSE	6.RP.	Ratios and Proportional Relationships 6.RP
ESSENTIAL CONCEPT AND/OR SKILL	**6.RP.A.**	**Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)**
DETAILED DESCRIPTOR	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
GRADE LEVEL EXPECTATION	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / COURSE	6.EE.	Expressions and Equations 6.EE
ESSENTIAL CONCEPT AND/OR SKILL	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities. (6.EE.B)**
DETAILED DESCRIPTOR	6.EE.B.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5) (DOK 1)

Iowa Student Standards

Science

Grade **5** - Adopted: **2015**

STRAND / COURSE	IA.5-LS1.	From Molecules to Organisms: Structures and Processes
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**
DETAILED DESCRIPTOR	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STRAND / COURSE	IA.5-ESS3.	Earth and Human Activity
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**
DETAILED DESCRIPTOR	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STRAND / COURSE	IA.3-5-ETS1.	Engineering Design
ESSENTIAL CONCEPT AND/OR SKILL		**Students who demonstrate understanding can:**
DETAILED DESCRIPTOR	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
DETAILED DESCRIPTOR	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
DETAILED DESCRIPTOR	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Iowa Student Standards

Science

Grade **6** - 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 **6** - 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.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (RST.6-8.7.)
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 **5** - Adopted: **2018**

STRAND / COURSE		CSTA K-12 Computer Science Standards
ESSENTIAL CONCEPT AND/OR SKILL	CSTA.1B.	Level 1B (Ages 8-11)
DETAILED DESCRIPTOR	1B-AP.	Algorithms & Programming
GRADE LEVEL EXPECTATION		Program Development
EXAMPLE	1B-AP-13.	Use an iterative process to plan the development of a program by including others'' perspectives and considering user preferences. (P1.1, P5.1)
EXAMPLE	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. (P2.2)
EXAMPLE	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

STRAND / COURSE		CSTA K-12 Computer Science Standards
ESSENTIAL CONCEPT AND/OR SKILL	CSTA.1B.	Level 1B (Ages 8-11)
DETAILED DESCRIPTOR	1B-IC.	Impacts of Computing
GRADE LEVEL EXPECTATION		Social Interactions
EXAMPLE	1B-IC-20.	Seek diverse perspectives for the purpose of improving computational artifacts. (P1.1)

Iowa Student Standards
Technology Education
Grade **6** - 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-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 **5** - 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.5.	Use appropriate tools strategically.
BENCHMARK	MP.7.	Look for and make use of structure.

Kansas Academic Standards

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
BENCHMARK	MP.7.	Look for and make use of structure.

STANDARD	6.RP.	Ratios and Proportional Relationships
BENCHMARK		**Understand ratio concepts and use ratio reasoning to solve problems.**
INDICATOR / PROFICIENCY LEVEL	**6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, (e.g. by reasoning about tables of equivalent ratios, tape diagrams, double number line diagram, or using calculations.)**
INDICATOR	6.RP.3a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find the missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

STANDARD	6.EE.	Expressions and Equations
BENCHMARK		**Reason about and solve one-variable equations and inequalities.**
INDICATOR / PROFICIENCY LEVEL	6.EE.4.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Kansas Academic Standards

Science

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

STANDARD	KS.5-LS.	LIFE SCIENCE
BENCHMARK	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
INDICATOR	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.

STANDARD	KS.5-ESS.	EARTH AND SPACE SCIENCE
BENCHMARK	**5-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**

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

STANDARD	**KS.3-5-ETS.**	**ENGINEERING DESIGN**
BENCHMARK	**3-5-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
INDICATOR	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
INDICATOR	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
INDICATOR	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Kansas Academic Standards

Science

Grade **6** - Adopted: **2013**

STANDARD	**KS.MS-LS.**	**LIFE SCIENCE**
BENCHMARK	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
INDICATOR	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

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-ESS3-3.	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.

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 **6** - 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.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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 **5** - Adopted: **2019**

STANDARD		**Computer Science Standards – Grade 5**
BENCHMARK		**Algorithms and Programming**
INDICATOR / PROFICIENCY LEVEL		**Modularity**
INDICATOR	5.AP.M.02.	With grade appropriate complexity, modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.

STANDARD		**Computer Science Standards – Grade 5**
BENCHMARK		**Algorithms and Programming**
INDICATOR / PROFICIENCY LEVEL		**Program Development**
INDICATOR	5.AP.PD.04.	Take on varying roles collaborating with peers to give feedback at different stages of program development, including design and implementation.

Kansas Academic Standards
Technology Education
Grade **6** - 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.

Kentucky Academic Standards
Mathematics
Grade **5** - 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.5.	Use appropriate tools strategically.
CATEGORY / GOAL	MP.7.	Look for and make use of structure.

Kentucky Academic Standards
Mathematics
Grade **6** - 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.5.	Use appropriate tools strategically.
CATEGORY / GOAL	MP.7.	Look for and make use of structure.
STRAND		Ratios and Proportional Relationships

CATEGORY / GOAL		**Cluster: Understanding ratio concepts and use ratio reasoning to solve problems.**
STANDARD / ORGANIZER	**KY.6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems. (MP.1, MP.4, MP.7)**
EXPECTATION	KY.6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
STRAND		**Expressions and Equations**
CATEGORY / GOAL		**Cluster: Reason about and solve one-variable equation and inequalities.**
STANDARD / ORGANIZER	KY.6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (MP.1, MP.2, MP.7)

Kentucky Academic Standards

Science

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

STRAND		**Fifth Grade**
CATEGORY / GOAL	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
CATEGORY / GOAL	5-ESS3-1.	Obtain and combine information about solutions individual communities use to protect the Earth's resources and environment.
STRAND		**3-5 Engineering Design**
CATEGORY / GOAL	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
CATEGORY / GOAL	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
CATEGORY / GOAL	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Kentucky Academic Standards

Science

Grade **6** - 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

Technology Education

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

STRAND		**Kentucky Academic Standards (KAS) for Computer Science**
CATEGORY / GOAL		**Algorithms and Programming**
STANDARD / ORGANIZER	**E-AP-01.**	**Create, follow, compare and refine algorithms for a task. Algorithms (step-by-step instructions) are common in many primary classrooms. Just as people use algorithms to complete daily routines, they can program computers to use algorithms to complete different tasks. Algorithms are commonly implemented using a precise language that computers can interpret. Different algorithms can be used to perform the same task. While the end results may be similar, the paths may be different. Students should be able to look at different ways to solve the same task and decide which would be the best solution. Algorithms can be expressed in non-computer languages, including natural language, flowcharts, and pseudocode.**
EXPECTATION		**Algorithms**
INDICATOR	E-AP-01.5.	Modify a set of algorithms and discuss how multiple paths can lead to the same solution.

Grade **5** - Adopted: **2015**

STRAND		**Technology – Intermediate**
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	I.BI1.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		**Technology – Intermediate**
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	I.BI3.AE.5.5.	Students use problem-solving processes to develop solutions to relatively complex problems.
EXPECTATION	I.BI3.AE.6.1.	Students connect knowledge and experiences from different subject areas.

STRAND		**Technology – Intermediate**
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		**Intermediate Enduring Knowledge – Understandings**
EXPECTATION	I.BI3.EK.1.	Technology assists in gathering, organizing and evaluating information from a variety of sources to answer essential questions.
EXPECTATION	I.BI3.EK.2.	Technology supports critical thinking skills used in inquiry/problem solving to make informed decisions.

STRAND		Technology – Intermediate
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		Intermediate Skills and Concepts – Inquiry/Problem-solving
EXPECTATION	I.BI3.SC2.2.	Use technology to solve problems using critical thinking and problem-solving strategies.
EXPECTATION	I.BI3.SC2.3.	Solve content-specific problems using a combination of technologies.

STRAND		Technology – Intermediate
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		Intermediate Skills and Concepts – Innovation
EXPECTATION	I.BI3.SC3.1.	Use technology to organize and develop creative solutions, ideas or product.

Kentucky Academic Standards

Technology Education

Grade **6** - 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.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 **5** - 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.5.	Use appropriate tools strategically.
TITLE	MP.7.	Look for and make use of structure.

Louisiana Academic Standards

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
TITLE	MP.7.	Look for and make use of structure.

STRAND	**6.RP.**	**Ratios and Proportional Relationships**
TITLE	**6.RP.A.**	**Understand ratio concepts and use ratio reasoning to solve problems.**
PERFORMANCE EXPECTATION	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
INDICATOR	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND	**6.EE.**	**Expressions and Equations**
TITLE	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities.**
PERFORMANCE EXPECTATION	6.EE.B.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Louisiana Academic Standards

Science

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

STRAND	**LA.SC.5.**	**Science – Grade 5**
TITLE	**5-LS1.**	**FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES**
PERFORMANCE EXPECTATION	5-LS1-1.	Ask questions about how air and water affect the growth of plants.

STRAND	**LA.SC.5.**	**Science – Grade 5**
TITLE	**5-ESS3.**	**EARTH AND HUMAN ACTIVITY**
PERFORMANCE EXPECTATION	5-ESS3-1.	Generate and compare multiple solutions about ways individual communities can use science to protect the Earth's resources and environment.

Louisiana Academic Standards

Science

Grade **6** - Adopted: **2017**

STRAND	**LA.SC.6.**	**Science – Grade 6**
TITLE	**6-MS-ESS1.**	**EARTH'S PLACE IN THE UNIVERSE**
PERFORMANCE EXPECTATION	6-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.

Louisiana Academic Standards

Technology Education

Grade **5** - 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.

STRAND	LA.ET.	Educational Technology
TITLE		Performance Indicators for Grades 3-5
PERFORMANCE EXPECTATION	ET.E.	Identify and investigate a world issue and generate a possible solution using digital tools and resources. (3, 4)

Louisiana Academic Standards

Technology Education

Grade **6** - 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 **5** - 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	MP5.	Use appropriate tools strategically: Students will use math tools such as tables, diagrams, and technology to explore and deepen their understanding of concepts.
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

Mathematics

Grade **6** - 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	MP5.	Use appropriate tools strategically: Students will use math tools such as tables, diagrams, and technology to explore and deepen their understanding of concepts.
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		Quantitative Reasoning – Ratio and Proportional Relationships
CATEGORY / PERFORMANCE INDICATOR	**QR.EA.1**	**Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.**
STANDARD	**6.RP.A.3:**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
EXPECTATION	6.RP.A.3a:	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / DOMAIN		Algebraic Reasoning – Expressions and Equations
CATEGORY / PERFORMANCE INDICATOR	**AR.EA.2**	**Reason about and solve one-variable equations and inequalities.**
STANDARD	6.EE.B.5:	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Maine Learning Results

Science

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

STRAND / DOMAIN	NGSS.5-LS.	LIFE SCIENCE
CATEGORY / PERFORMANCE INDICATOR	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**

STANDARD		**Students who demonstrate understanding can:**
EXPECTATION	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
STRAND / DOMAIN	**NGSS.5-ESS.**	**EARTH AND SPACE SCIENCE**
CATEGORY / PERFORMANCE INDICATOR	**5-ESS3.**	**Earth and Human Activity**
STANDARD		**Students who demonstrate understanding can:**
EXPECTATION	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
STRAND / DOMAIN	**NGSS.3-5-ETS.**	**ENGINEERING DESIGN**
CATEGORY / PERFORMANCE INDICATOR	**3-5-ETS1.**	**Engineering Design**
STANDARD		**Students who demonstrate understanding can:**
EXPECTATION	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
EXPECTATION	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
EXPECTATION	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Maine Learning Results

Science

Grade **6** - Adopted: **2019**

STRAND / DOMAIN	**NGSS.MS-LS.**	**LIFE SCIENCE**
CATEGORY / PERFORMANCE INDICATOR	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
STANDARD		**Students who demonstrate understanding can:**
EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
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-ESS3-3.	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.

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

Mathematics

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

STRAND / TOPIC / STANDARD		**Grade 6 Math**
TOPIC / INDICATOR	**6.RP.**	**Ratios and Proportional Relationships**
INDICATOR / PROFICIENCY LEVEL	**6.RP.A.**	**Understanding ratio concepts and use ratio reasoning to solve problems.**
OBJECTIVE	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
EXPECTATION	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / TOPIC / STANDARD		**Grade 6 Math**
TOPIC / INDICATOR	**6.EE.**	**Expressions and Equations**
INDICATOR / PROFICIENCY LEVEL	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities.**
OBJECTIVE	6.EE.B.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Maryland College and Career-Ready Standards

Science

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

STRAND / TOPIC / STANDARD	**NGSS.5-LS.**	**LIFE SCIENCE**

TOPIC / INDICATOR	**5-LS1.**	**From Molecules to Organisms: Structures and Processes**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
STRAND / TOPIC / STANDARD	**NGSS.5-ESS.**	**EARTH AND SPACE SCIENCE**
TOPIC / INDICATOR	**5-ESS3.**	**Earth and Human Activity**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
STRAND / TOPIC / STANDARD	**NGSS.3-5-ETS.**	**ENGINEERING DESIGN**
TOPIC / INDICATOR	**3-5-ETS1.**	**Engineering Design**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
OBJECTIVE	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
OBJECTIVE	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Maryland College and Career-Ready Standards

Science

Grade **6** - Adopted: **2013**

STRAND / TOPIC / STANDARD	**NGSS.MS-LS.**	**LIFE SCIENCE**
TOPIC / INDICATOR	**MS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
INDICATOR / PROFICIENCY LEVEL		**Students who demonstrate understanding can:**
OBJECTIVE	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
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-ESS3-3.	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.
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 **6** - 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		Explore the function and application of a variety of technological processes, equipment, and systems used in agriculture (e.g. agroforestry, irrigation, global positioning systems).
EXPECTATION		Design, develop, use, manage, maintain, and assess a closed system that supports living organisms (e.g. terrarium, hydroponics station).
EXPECTATION		Evaluate the positive and negative effects of technological solutions to agricultural problems.
EXPECTATION		Describe techniques used to provide long-term storage of food and reduce the health risk caused by tainted food (STL, 15J).

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		Design, construct, and test a device that either minimizes or maximizes energy transfer (MS-PS3-3).

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 **5** - 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.5.	Use appropriate tools strategically.
STRAND	MP.7.	Look for and make use of structure.

Massachusetts Curriculum Frameworks

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
STRAND	MP.7.	Look for and make use of structure.

FOCUS / COURSE	MA.6.RP.	Ratios and Proportional Relationships
STRAND	**6.RP.A.**	**Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.**
STANDARD / CONCEPT / SKILL	**6.RP.A.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
INDICATOR	6.RP.A.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements. Find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

FOCUS / COURSE	MA.6.EE.	Expressions and Equations
STRAND	**6.EE.B.**	**Reason about and solve one-variable equations and inequalities.**
STANDARD / CONCEPT / SKILL	6.EE.B.5.	Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Massachusetts Curriculum Frameworks

Science

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

FOCUS / COURSE	MA.5-ESS.	Grade 5: Earth and Space Sciences
STRAND	**ESS3.**	**Earth and Human Activity**
STANDARD / CONCEPT / SKILL	5-ESS3-1.	Obtain and combine information about ways communities reduce human impact on the Earth's resources and environment by changing an agricultural, industrial, or community practice or process.

FOCUS / COURSE	MA.5-LS.	Grade 5: Life Science
STRAND	**LS1.**	**From Molecules to Organisms: Structures and Processes**
STANDARD / CONCEPT / SKILL	5-LS1-1.	Ask testable questions about the process by which plants use air, water, and energy from sunlight to produce sugars and plant materials needed for growth and reproduction.

FOCUS / COURSE	**MA.5-ETS.**	**Grade 5: Technology/Engineering**
STRAND	**ETS3.**	**Technological Systems**
STANDARD / CONCEPT / SKILL	5.3-5-ETS3-1(MA).	Use informational text to provide examples of improvements to existing technologies (innovations) and the development of new technologies (inventions). Recognize that technology is any modification of the natural or designed world done to fulfill human needs or wants.

Massachusetts Curriculum Frameworks

Science

Grade **6** - Adopted: **2016**

FOCUS / COURSE	**MA.6-ETS.**	**Grade 6: Technology/Engineering**
STRAND	**ETS1.**	**Engineering Design**
STANDARD / CONCEPT / SKILL	6.MS-ETS1-1.	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution. Include potential impacts on people and the natural environment that may limit possible solutions.
STANDARD / CONCEPT / SKILL	6.MS-ETS1-6(MA).	Communicate a design solution to an intended user, including design features and limitations of the solution.

FOCUS / COURSE	**MA.6-ETS.**	**Grade 6: Technology/Engineering**
STRAND	**ETS2.**	**Materials, Tools, and Manufacturing**
STANDARD / CONCEPT / SKILL	6.MS-ETS2-2(MA).	Given a design task, select appropriate materials based on specific properties needed in the construction of a solution.
STANDARD / CONCEPT / SKILL	6.MS-ETS2-3(MA).	Choose and safely use appropriate measuring tools, hand tools, fasteners, and common hand-held power tools used to construct a prototype.

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

FOCUS / COURSE	MA.3-5.CT.	Grades 3 – 5: Computational Thinking (CT)
STRAND	**3-5.CT.a.**	**Abstraction**
STANDARD / CONCEPT / SKILL	3-5.CT.a.3.	Make a list of sub-problems to consider, while addressing a larger problem.

FOCUS / COURSE	MA.3-5.CT.	Grades 3 – 5: Computational Thinking (CT)
STRAND	**3-5.CT.b.**	**Algorithms**
STANDARD / CONCEPT / SKILL	3-5.CT.b.1.	Define an algorithm as a sequence of instructions that can be processed by a computer.
STANDARD / CONCEPT / SKILL	3-5.CT.b.4.	Individually and collaboratively create an algorithm to solve a problem (e.g., move a character/robot/person through a maze).

FOCUS / COURSE	MA.3-5.CT.	Grades 3 – 5: Computational Thinking (CT)
STRAND	**3-5.CT.d.**	**Programming and Development**
STANDARD / CONCEPT / SKILL	3-5.CT.d.1.	Individually and collaboratively create, test, and modify a program in a graphical environment (e.g., block-based visual programming language).

Massachusetts Curriculum Frameworks

Technology Education

Grade **6** - Adopted: **2016**

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 **5** - Adopted: **2010**

STRAND / STANDARD CATEGORY	MI.CC.MP.5.	Mathematical Practices
STANDARD	MP.5.1.	Make sense of problems and persevere in solving them.
STANDARD	MP.5.2.	Reason abstractly and quantitatively.
STANDARD	MP.5.3.	Construct viable arguments and critique the reasoning of others.
STANDARD	MP.5.4.	Model with mathematics.
STANDARD	MP.5.5.	Use appropriate tools strategically.
STANDARD	MP.5.7.	Look for and make use of structure.

Michigan Academic Standards

Mathematics

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

STRAND / STANDARD CATEGORY	MI.CC.MP.6.	Mathematical Practices
STANDARD	MP.6.1.	Make sense of problems and persevere in solving them.
STANDARD	MP.6.2.	Reason abstractly and quantitatively.
STANDARD	MP.6.3.	Construct viable arguments and critique the reasoning of others.
STANDARD	MP.6.4.	Model with mathematics.
STANDARD	MP.6.5.	Use appropriate tools strategically.
STANDARD	MP.6.7.	Look for and make use of structure.

STRAND / STANDARD CATEGORY	MI.CC.RP.6.	Ratios and Proportional Relationships
STANDARD		**Understand ratio concepts and use ratio reasoning to solve problems.**
GRADE LEVEL EXPECTATION	**RP.6.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
EXPECTATION	RP.6.3(a)	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

STRAND / STANDARD CATEGORY	**MI.CC.EE.6.**	**Expressions and Equations**
STANDARD		**Reason about and solve one-variable equations and inequalities.**
GRADE LEVEL EXPECTATION	EE.6.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Michigan Academic Standards

Science

Grade **5** - Adopted: **2015**

STRAND / STANDARD CATEGORY	**MI.SC.2.**	**Matter and Energy in Organisms and Ecosystems**
STANDARD	5-LS1-1.	Support an argument that plants get the materials they need for growth chiefly from air and water.
STRAND / STANDARD CATEGORY	**MI.SC.3.**	**Earth's Systems**
STANDARD	5-ESS3-1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
STRAND / STANDARD CATEGORY	**MI.SC.5.**	**Engineering Design**
STANDARD	3-5-ETS1-1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
STANDARD	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
STANDARD	3-5-ETS1-3.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Michigan Academic Standards

Science

Grade **6** - 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.9.**	**Interdependent Relationships in Ecosystems**
STANDARD	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

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

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

STRAND / STANDARD CATEGORY		**Michigan Computer Science Standards**
STANDARD		**LEVEL 1B: UPPER ELEMENTARY (GRADES 3-5)**
GRADE LEVEL EXPECTATION		**ALGORITHMS AND PROGRAMMING**
EXPECTATION	1B-AP-11.	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. Subconcept: Modularity; Practice 3.2
EXPECTATION	1B-AP-13.	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. Subconcept: Program Development; Practice 1.1, 5.1
EXPECTATION	1B-AP-16.	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. Subconcept: Program Development; Practice 2.2
EXPECTATION	1B-AP-17.	Describe choices made during program development using code comments, presentations, and demonstrations. Subconcept: Program Development; Practice 7.2

Michigan Academic Standards

Technology Education

Grade **6** - 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 **6** - 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

Science

Grade **5** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.5.1.**	**The Nature of Science and Engineering**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**5.1.1.**	**The Practice of Science**
INDICATORS OF PROGRESS / STRAND	**5.1.1.2.**	**The student will understand that scientific inquiry requires identification of assumptions, use of critical and logical thinking, and consideration of alternative explanations.**
INDICATORS OF PROGRESS	5.1.1.2.2.	Identify and collect relevant evidence, make systematic observations and accurate measurements, and identify variables in a scientific investigation.
CONTENT STANDARD / DOMAIN	**MN.5.1.**	**The Nature of Science and Engineering**

PERFORMANCE INDICATOR / DOMAIN COMPONENT	**5.1.3.**	**Interactions Among Science, Technology, Engineering, Mathematics, and Society**
INDICATORS OF PROGRESS / STRAND	**5.1.3.2.**	**The student will understand that men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.**
INDICATORS OF PROGRESS	5.1.3.2.1.	Describe how science and engineering influence and are influenced by local traditions and beliefs.

CONTENT STANDARD / DOMAIN	**MN.5.1.**	**The Nature of Science and Engineering**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**5.1.3.**	**Interactions Among Science, Technology, Engineering, Mathematics, and Society**
INDICATORS OF PROGRESS / STRAND	**5.1.3.4.**	**The student will understand that tools and mathematics help scientists and engineers see more, measure more accurately, and do things that they could not otherwise accomplish.**
INDICATORS OF PROGRESS	5.1.3.4.1.	Use appropriate tools and techniques in gathering, analyzing and interpreting data.

CONTENT STANDARD / DOMAIN	**MN.5.3.**	**Earth and Space Science**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**5.3.4.**	**Human Interaction with Earth Systems**
INDICATORS OF PROGRESS / STRAND	**5.3.4.1.**	**The student will understand that in order to maintain and improve their existence, humans interact with and influence Earth systems.**
INDICATORS OF PROGRESS	5.3.4.1.3.	Compare the impact of individual decisions on natural systems.

Minnesota Academic Standards

Science

Grade **6** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.6.1.**	**The Nature of Science and Engineering**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**6.1.2.**	**The Practice of Engineering**
INDICATORS OF PROGRESS / STRAND	**6.1.2.1.**	**The student will understand that engineers create, develop and manufacture machines, structures, processes and systems that impact society and may make humans more productive.**
INDICATORS OF PROGRESS	6.1.2.1.2.	Recognize that there is no perfect design and that new technologies have consequences that may increase some risks and decrease others.

INDICATORS OF PROGRESS	6.1.2.1.4.	Explain the importance of learning from past failures, in order to inform future designs of similar products or systems.

CONTENT STANDARD / DOMAIN	**MN.6.1.**	**The Nature of Science and Engineering**
PERFORMANCE INDICATOR / DOMAIN COMPONENT	**6.1.2.**	**The Practice of Engineering**
INDICATORS OF PROGRESS / STRAND	**6.1.2.2.**	**The student will understand that engineering design is the process of devising products, processes and systems that address a need, capitalize on an opportunity, or solve a specific problem.**

INDICATORS OF PROGRESS	6.1.2.2.1.	Apply and document an engineering design process that includes identifying criteria and constraints, making representations, testing and evaluation, and refining the design as needed to construct a product or system that solves a problem.

Grade **6** - 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	6.13.7.7.	Compare and integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, table, map).
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 **5** - Adopted: **2009**

CONTENT STANDARD / DOMAIN	**MN.ITL.3-5.**	**Information and Technology Literacy Standards (Refresh 2009)**

PERFORMANCE INDICATOR / DOMAIN COMPONENT	**3-5.3.**	**Technology Use and Concepts: explore multiple technologies, evaluate their suitability for the desired educational or personal task, and apply the tools needed.**
INDICATORS OF PROGRESS / STRAND	**3-5.3.I.**	**Use of Technology**
INDICATORS OF PROGRESS	**3-5.3.I.D.**	**Strategically solve information and technology issues.**
INDICATOR	3-5.3.I.D.1.	Seek assistance to trouble shoot technical problems.

Minnesota Academic Standards

Technology Education

Grade **6** - 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 **5** - 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.5.	Use appropriate tools strategically.
SUBJECT	MP.7.	Look for and make use of structure.

Mississippi College & Career Readiness Standards

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
SUBJECT	MP.7.	Look for and make use of structure.

THEME	MS.6.RP.	Ratios and Proportional Relationships (RP)
SUBJECT		**Understand ratio concepts and use ratio reasoning to solve problems**
STANDARD	**6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
OBJECTIVE	6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

THEME	MS.6.EE.	Expressions and Equations (EE)
SUBJECT		**Reason about and solve one-variable equations and inequalities**
STANDARD	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Mississippi College & Career Readiness Standards

Science

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

THEME	MS.E.5.	GRADE FIVE: Earth and Space Science
SUBJECT		**Earth's Resources**
STANDARD	**E.5.10.**	**Students will demonstrate an understanding of the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved.**
OBJECTIVE	E.5.10.1.	Collect and organize scientific ideas that individuals and communities can use to conserve Earth's natural resources and systems (e.g., implementing watershed management practices to conserve water resources, utilizing no-till farming to improve soil fertility, reducing emissions to abate air pollution, or recycling to reduce landfill waste).

Mississippi College & Career Readiness Standards

Technology Education

Grade **6** - 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

Mathematics

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

STRAND: BIG IDEA / STANDARD	**MO.5.RA.**	**Relationships and Algebraic Thinking**
CONCEPT: GLE / BENCHMARK	**5.RA.C.**	**Use the four operations to represent and solve problems.**
GLE / COMPONENT	5.RA.C.5.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Missouri Learning Standards

Mathematics

Grade **6** - Adopted: **2016**

STRAND: BIG IDEA / STANDARD	**MO.6.RP.**	**Ratios and Proportional Relationships**
CONCEPT: GLE / BENCHMARK	**6.RP.A.**	**Understand and use ratios to solve problems.**
GLE / COMPONENT	**6.RP.A.3.**	**Solve problems involving ratios and rates.**
INDICATOR / PROFICIENCY	6.RP.A.3 a.	Create tables of equivalent ratios, find missing values in the tables and plot the pairs of values on the Cartesian coordinate plane.
STRAND: BIG IDEA / STANDARD	**MO.6.EEI.**	**Expressions, Equations and Inequalities**
CONCEPT: GLE / BENCHMARK	**6.EEI.A.**	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
GLE / COMPONENT	6.EEI.A.1.	Describe the difference between an expression and an equation.
STRAND: BIG IDEA / STANDARD	**MO.6.EEI.**	**Expressions, Equations and Inequalities**
CONCEPT: GLE / BENCHMARK	**6.EEI.B.**	**Reason about and solve one-variable equations and inequalities.**
GLE / COMPONENT	6.EEI.B.4.	Use substitution to determine whether a given number in a specified set makes a one-variable equation or inequality true.
GLE / COMPONENT	6.EEI.B.5.	Understand that if any solutions exist, the solution set for an equation or inequality consists of values that make the equation or inequality true.

GLE / COMPONENT	6.EEI.B.7.	Solve one-step linear equations in one variable involving non-negative rational numbers.

Missouri Learning Standards

Science

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

STRAND: BIG IDEA / STANDARD	**MO.5.LS1.**	**From Molecules to Organisms: Structure and Processes**
CONCEPT: GLE / BENCHMARK	**5.LS1.C.**	**Organization for Matter and Energy Flow in Organisms**
GLE / COMPONENT	5.LS1.C.1.	Support an argument that plants get the materials (i.e. carbon dioxide, water, sunlight) they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. Clarification Statement: [Do not assess photosynthesis.]
STRAND: BIG IDEA / STANDARD	**MO.5.ESS3.**	**Earth and Human Activity**
CONCEPT: GLE / BENCHMARK	**5.ESS3.C.**	**Human Impacts on Earth's Systems**
GLE / COMPONENT	5.ESS3.C.1.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
STRAND: BIG IDEA / STANDARD	**MO.5.ETS1.**	**Engineering Design**
CONCEPT: GLE / BENCHMARK	**5.ETS1.A.**	**Defining and Delimiting Engineering Problems**
GLE / COMPONENT	5.ETS1.A.1.	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
STRAND: BIG IDEA / STANDARD	**MO.5.ETS1.**	**Engineering Design**
CONCEPT: GLE / BENCHMARK	**5.ETS1.B.**	**Developing Possible Solutions**
GLE / COMPONENT	5.ETS1.B.1.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
STRAND: BIG IDEA / STANDARD	**MO.5.ETS1.**	**Engineering Design**
CONCEPT: GLE / BENCHMARK	**5.ETS1.C.**	**Optimizing the Solution Process**
GLE / COMPONENT	5.ETS1.C.1.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Science

Grade **6** - Adopted: **2016**

STRAND: BIG IDEA / STANDARD	**MO.6-8.LS.**	**Life Sciences**
CONCEPT: GLE / BENCHMARK	**6-8.LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
GLE / COMPONENT	**6-8.LS2.C.**	**Ecosystem Dynamics, Functioning and Resilience**
INDICATOR / PROFICIENCY	6-8.LS2.C.2.	Evaluate benefits and limitations of differing design solutions for maintaining an ecosystem. [Clarification Statement: Examples of design solutions could include water, land, and species protection, and the prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]

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 **6** - 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.6-8.7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
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 **5** - Adopted: **2019**

STRAND: BIG IDEA / STANDARD		**Computer Science Performance Standards**
CONCEPT: GLE / BENCHMARK		**Computing Systems**
GLE / COMPONENT		**Troubleshooting**
INDICATOR / PROFICIENCY	5.CS.T.01.	Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use. Discuss problems with peers and adults, apply strategies for solving these problems and explain why the strategy should work.

STRAND: BIG IDEA / STANDARD		**Computer Science Performance Standards**
CONCEPT: GLE / BENCHMARK		**Algorithms & Programming**
GLE / COMPONENT		**Algorithms**
INDICATOR / PROFICIENCY	5.AP.A.01.	Compare and simplify multiple algorithms (sets of step-by-step instructions) for accomplishing the same task verbally and kinesthetically, with robot devices or a programming language, then determine which is the most efficient.

STRAND: BIG IDEA / STANDARD		**Computer Science Performance Standards**
CONCEPT: GLE / BENCHMARK		**Algorithms & Programming**
GLE / COMPONENT		**Control**
INDICATOR / PROFICIENCY	5.AP.C.01.	Create a program using control structures (e.g., sequence, conditionals, interactive-looping), event handlers and variables to solve a problem or express ideas both independently and collaboratively.

Missouri Learning Standards

Technology Education

Grade **6** - 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 **5** - 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.5.	Use appropriate tools strategically.
BENCHMARK / STANDARD	MP.7.	Look for and make use of structure.

Montana Content Standards

Mathematics

Grade **6** - 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.5.	Use appropriate tools strategically.
BENCHMARK / STANDARD	MP.7.	Look for and make use of structure.

CONTENT STANDARD / DOMAIN	MT.CC.6.RP.	Ratios and Proportional Relationships
BENCHMARK / STANDARD		**Understand ratio concepts and use ratio reasoning to solve problems.**
GRADE LEVEL EXPECTATION / BENCHMARK	**6.RP.3.**	**Use ratio and rate reasoning to solve real-world and mathematical problems from a variety of cultural contexts, including those of Montana American Indians, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**
EXPECTATION	6.RP.3.a.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

CONTENT STANDARD / DOMAIN	MT.CC.6.EE.	Expressions and Equations
BENCHMARK / STANDARD		**Reason about and solve one-variable equations and inequalities.**
GRADE LEVEL EXPECTATION / BENCHMARK	6.EE.5.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Montana Content Standards

Science

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

CONTENT STANDARD / DOMAIN	MT.5.LS.	LIFE SCIENCE content standards for fifth grade are that each student will:
BENCHMARK / STANDARD	5.LS.1.	Support an argument that plants get the materials they need for growth chiefly from air and water

CONTENT STANDARD / DOMAIN	**MT.5.ESS.**	**EARTH AND SPACE SCIENCE content standards for fifth grade are that each student will:**
BENCHMARK / STANDARD	5.ESS.3.	Obtain and combine information from various sources about ways individual communities use science ideas to protect the Earth's resources, environment, and systems and describe examples of how American Indians use scientific knowledge and practices to maintain relationships with the natural world

Montana Content Standards

Science

Grade **6** - Adopted: **2016**

CONTENT STANDARD / DOMAIN	**MT.6-8.LS.**	**LIFE SCIENCE content standards for sixth through eighth grades are that each student will:**
BENCHMARK / STANDARD	6-8.LS.9.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services

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

Technology Education

Grade **5** - Adopted: **2020/Effective 2021**

CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR FIFTH GRADE**

BENCHMARK / STANDARD	**(4)**	**The innovative designer content standards for fifth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(a)	use digital and non-digital tools to plan and manage a design process; and
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(b)	use design process to develop and test prototypes.
CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR FIFTH GRADE**
BENCHMARK / STANDARD	**(5)**	**The computational thinker content standards for fifth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(a)	explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking;
GRADE LEVEL EXPECTATION / BENCHMARK	(5)(b)	break down problems into smaller parts, identify key information, and propose solutions; and
CONTENT STANDARD / DOMAIN		**CONTENT STANDARDS FOR TECHNOLOGY INTEGRATION FOR FIFTH GRADE**
BENCHMARK / STANDARD	**(6)**	**The creative communicator content standards for fifth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(6)(b)	use a variety of strategies for remixing or repurposing to create new works; and
GRADE LEVEL EXPECTATION / BENCHMARK	(6)(c)	create digital objects to communicate ideas visually and graphically.
CONTENT STANDARD / DOMAIN		**COMPUTER SCIENCE CONTENT STANDARDS FOR FIFTH GRADE**
BENCHMARK / STANDARD	**(1)**	**Computer science algorithms and programming standards for fifth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(1)(e)	describe choices made during program development.
CONTENT STANDARD / DOMAIN		**COMPUTER SCIENCE CONTENT STANDARDS FOR FIFTH GRADE**
BENCHMARK / STANDARD	**(4)**	**Computer science impacts of computing standards for fifth grade are that each student will:**
GRADE LEVEL EXPECTATION / BENCHMARK	(4)(c)	utilize diverse perspectives for the purpose of improving computational artifacts;

Montana Content Standards

Technology Education

Grade **6** - 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;
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