



Ohio

Ohio's Standards and Model Curriculum
Computer Science Grade 2

DECEMBER 2018

Computer Science Model Curriculum for Grade 2

Strand	Computing Systems
Topic	Devices
<p>CS.D.2.a Select and operate commonly used devices to perform a variety of tasks.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students began operating devices independently. In grade 2, students begin selecting devices with a purpose in mind. In grade 3, students will develop an understanding that the device they selected for a specific task has components that all play a role in the computer system. The data is entered into an external device and is then placed into the computer system where it can be shared locally and globally.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Different devices can be used to perform specific tasks. <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Choose between devices that can perform specific tasks <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students will use their knowledge of hardware and software from kindergarten and grade 1 to make a selection to complete a task.</p> <p>CONTENT FOCUS</p> <p>The focus is on the student making a selection (i.e., device, software, hardware) to complete a task.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Computing Culture</i></p> <ol style="list-style-type: none"> 2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability. <p><i>Practice 2. Collaborating Around Computing</i></p> <ol style="list-style-type: none"> 4. Evaluate and select technological tools that can be used to collaborate on a project.

Strand	Computing Systems
Topic	Devices
	<p><i>Practice 6. Testing and Refining Computational Artifacts</i> 2. Identify and fix errors using a systematic process.</p> <p><i>Practice 7. Communicating About Computing</i> 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.</p>

Strand	Computing Systems
Topic Hardware and Software	
<p>CS.HS.2.a Select and use hardware and software necessary for accomplishing a task.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students began comparing hardware and software and their functions with guidance. In grade 2, students begin selecting devices with a purpose in mind. In grade 3, students will select learning tools or devices in order to plan, implement, and reflect upon tasks.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Hardware and software selection to perform a specific task • Hardware and software interact to work together <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Identify hardware and software interactions • Select hardware and/or software to perform a specific task <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students will select hardware and software with a specific purpose in mind.</p> <p>CONTENT FOCUS</p> <p>The focus is on the selection of a tool to complete a specific task.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Computing Culture</i></p> <ol style="list-style-type: none"> 2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability. <p><i>Practice 2. Collaborating Around Computing</i></p> <ol style="list-style-type: none"> 4. Evaluate and select technological tools that can be used to collaborate on a project.

Strand	Computing Systems
Topic	Hardware and Software
	<p><i>Practice 6. Testing and Refining Computational Artifacts</i> 2. Identify and fix errors using a systematic process.</p> <p><i>Practice 7. Communicating About Computing</i> 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.</p>

Strand	Computing Systems
Topic	Troubleshooting
<p>CS.T.2.a Use problem solving strategies to troubleshoot a problem.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, and in grade 2, students continue using a problem-solving process to troubleshoot. In grade 3, students will begin to move beyond trial and error to apply more strategic troubleshooting techniques to fix their problems.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • There are a variety of problem solving processes. A problem-solving process typically includes identifying the problem, brainstorming solutions, making a plan, testing solutions, and revising <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Apply a problem-solving process, using appropriate terminology to solve a problem <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students will identify problems (e.g., left click or right click, no audio, no power, navigating windows) and attempt to solve them using a problem-solving process.</p> <p>CONTENT FOCUS</p> <p>The focus is on solving a problem using a problem-solving process.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 6. Testing and Refining Computational Artifacts</i></p> <ol style="list-style-type: none"> 1. Systematically test computational artifacts by considering all scenarios and using test cases. 2. Identify and fix errors using a systematic process. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none"> 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Networks and the Internet
Topic	Networking
<p>NI.N.2.a Describe how information can be communicated electronically to gain a deeper understanding of how information is transmitted (e.g., email, social media).</p> <p>NI.N.2.b Use computing devices that are connected to share and receive information from the global community.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students began to develop an understanding of concepts of networking and of unique identifiers within a global community. Students also began to develop an understanding of what devices people use to network and how each device people network with has a unique identifier. In addition, students recognized that the computing devices with unique identifiers can be connected together to access and retrieve information. In grade 2, students can describe what a network is, devices we use to network, how devices can be identified, and how they can be connected together. Additionally, students can network using devices to access and retrieve information within a global community. In grade 3, students will explore how information is sent and received over the internet. Students will continue to build an understanding of how information is sharing, received, and stored.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Users of the internet communicate with a global community • All devices that are connected to the network have a unique identifier • A variety of information can be communicated electronically <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Interact with the global community • Create and use communications that are transmitted electronically • Match devices with unique identifiers <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students will communicate and retrieve information. They will identify the devices we use to communicate.</p> <p>The internet is global. Each device has a unique identifier. This is not limited to IP addresses. A person's phone number can serve as a metaphor for a unique identifier. For example, two people can exchange information using their phones providing they call, or in other words connect to, the correct phone number.</p>

Strand	Networks and the Internet
Topic	Networking
	<p>CONTENT FOCUS</p> <p>The focus is on understanding and using networks, unique identifiers, and electronic communication.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Culture</i></p> <ol style="list-style-type: none">1. Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Networks and the Internet
Topic	Cybersecurity
<p>NI.C.2.a Explain and demonstrate secure practices (e.g., creating strong passwords) to protect private information.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In kindergarten through grade 2, students work to explain why it is important to use technology in a responsible way in order to make decisions about its use. Students also work to demonstrate how to use technology appropriately and safely and how to protect login information. In grade 3, students will identify personal information and how passwords are used to protect that information.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Decision making when using technology <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Create and use passwords appropriately • Log in and out of apps and devices • Explain and demonstrate secure practices <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students need to be able to apply the skills below to demonstrate understanding of the content statement:</p> <ul style="list-style-type: none"> • Protecting their password • Making strong passwords • Logging in and out of apps and devices • Being responsible • Discussing impacts of poorly secured information <p>CONTENT FOCUS</p> <p>The focus is on using passwords and devices appropriately and explaining the importance of secure practices.</p>

Strand	Networks and the Internet
Topic	Cybersecurity
	<p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 7. Communicating About Computing</i></p> <p>3. Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution.</p>

Strand	Data and Analysis
Topic Data Collection and Storage	
<p>DA.DCS.2.a Collect and organize data to store, retrieve and modify.</p> <p>DA.DCS.2.b Manipulate data to perform various tasks.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students began storing and retrieving data with guidance. In grade 2, students begin to retrieve data to modify. In grade 3, students will use different software tools to access data and store it in different locations. In grade 3, students will collect, record and maintain data, over time, using various tools, such as a thermometer, ruler, scale, and surveys.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Data is information. When using technology, data is often quantities, characters, or symbols that are the inputs and outputs of computer programs (see Code.org) • Data can be organized, collected, stored, and retrieved in a variety of ways <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Use appropriate tools to organize data • Use appropriate tools to collect data • Store, retrieve and save data • Edit, revise, and rename data <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can address this content with or without a computing device.</p> <p>A structured set of data can be used to help students learn the skills of retrieving and organizing data.</p> <p>CONTENT FOCUS</p> <p>The focus is on modifying retrieved data.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 4. Developing and Using Abstractions</i></p> <ol style="list-style-type: none"> 2. Evaluate existing technological functionalities and incorporate them into new designs.

Strand	Data and Analysis
Topic Visualization and Communication	
<p>DA.VC.2.a Organize, analyze and present data in various formats.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1 students will make observations of representations of data. In grade 2, they will continue to analyze data in various formats. In grade 3, students will extend their knowledge by creating scaled picture and bar graphs. They will also create line plots using scales that include whole numbers and fractions (e.g., halves and fourths).</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Data can be sorted by attributes • Data can be presented in a variety of formats <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Collect, organize and analyze data for peer understanding • Describe and sort data by different attributes to create multiple representation of the same data sets • Transfer data between grids to lists <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can address this content with or without a computing device.</p> <p>Various formats can include:</p> <ul style="list-style-type: none"> • concept maps • Venn diagrams • categorical sort • modeling • drawings • sorting by different attributes <p>Students can analyze data by looking at the data of two mammals, for example. What traits do they have in common? What traits are different?</p>

Strand	Data and Analysis
Topic Visualization and Communication	
	<p>CONTENT FOCUS</p> <p>The focus is on the analysis of representations of data.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 5. Creating Computational Artifacts</i></p> <ol style="list-style-type: none"> 1. Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user experience. 2. Create a computational artifact for practical intent, personal expression, or to address a societal issue. 3. Modify an existing artifact to improve or customize it. <p><i>Practice 6. Testing and Refining Computational Artifacts</i></p> <ol style="list-style-type: none"> 1. Systematically test computational artifacts by considering all scenarios and using test cases. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none"> 1. Select, organize, and interpret large data sets from multiple sources to support a claim. 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Data and Analysis
Topic Inference and Modeling	
<p>DA.IM.2.a Interpret and analyze data, graphs, models or charts.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students continued to model data and identify patterns and began explaining their model. In grade 2, students begin interpreting models. In grade 3, students will analyze and explain relationships or patterns and predict an unknown.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Data can be represented through modeling • Patterns within the data can be discovered, explained, and interpreted. <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Model data to discover and identify patterns • Explain the model and patterns discovered • Interpret the meaning of the patterns discovered <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can address this content with or without a computing device.</p> <p>Students model data through representation data visually, although not necessarily using paper and pencil as in graphs. Data can be modeled using manipulatives and physical models.</p> <p>CONTENT FOCUS</p> <p>The focus is on the interpretation and analysis of the model.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 5. Creating Computational Artifacts</i></p> <ol style="list-style-type: none"> 1. Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user experience. 2. Create a computational artifact for practical intent, personal expression, or to address a societal issue. 3. Modify an existing artifact to improve or customize it.

Strand	Data and Analysis
Topic	Inference and Modeling
	<p><i>Practice 6. Testing and Refining Computational Artifacts</i></p> <ol style="list-style-type: none">1. Systematically test computational artifacts by considering all scenarios and using test cases. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">1. Select, organize, and interpret large data sets from multiple sources to support a claim.2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Algorithmic Thinking and Programming
Topic	Algorithms
<p>ATP.A.2.a Model a real-world process by constructing and following step-by-step instructions (i.e., algorithms) to complete tasks.</p>	<p>Expectations for Learning In grade 1, students constructed and followed directions through pictures and written words with guidance. In grade 2, students construct and follow directions in a real-world context through written words, statements, and visual symbols. In grade 3, students will create step-by-step tasks (i.e., algorithms) and find errors within an algorithm.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Step by step directions can be constructed to complete a real-world task • Directions can be given verbally or visually <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Construct and complete a verbal and/or visual task with multiple steps <p>Content Elaborations</p> <p>CLARIFICATIONS Students identify a task from their daily life (e.g., brush teeth, getting ready for school, walking home from school) and break it into a sequence of steps (i.e., algorithm). Students should construct a sequence of steps to complete a task using precise language and visuals/symbols, in order to see the effects of a sequence. Students should compare sequences for the same task, to identify similarities and differences within the sequence. Algorithms are commonly implemented using a precise language that computers can interpret.</p> <p>CONTENT FOCUS The focus is on construction of multi-step directions and the sequence of steps to complete a task.</p> <p>COMPUTER SCIENCE PRACTICES <i>Practice 4. Developing and Using Abstractions</i> 4. Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.</p>

Strand	Algorithmic Thinking and Programming
Topic	Algorithms
	<p><i>Practice 6. Testing and Refining Computational Artifacts</i> 2. Identify and fix errors using a systematic process.</p> <p><i>Practice 7. Communicating About Computing</i> 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.</p>

Strand	Algorithmic Thinking and Programming
Topic	Variables and Data Representation
<p>ATP.VDR.2.a Construct a model that shows the way programs store and manipulate data by using numbers or other symbols to represent information.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students used numbers, symbols and pictures to represent information. In grade 2, students model the use of numbers, symbols and pictures to manipulate and store information. In grade 3, students will define and identify variables to understand how they are used in algorithms.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Numbers, symbols, or pictures can be used to model programming • Information is stored in a variety of ways <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Model programming using symbols, numbers, or pictures • Store information in a variety of ways <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Information in the real world can be represented in computer programs. (K-12 Computer Science Framework, 2016)</p> <p>Computers use stored information by choosing only relevant information.</p> <p>CONTENT FOCUS</p> <p>The focus is on modeling the way programs store and manipulate data.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 4. Developing and Using Abstractions</i></p> <p>4. Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.</p>

Strand	Algorithmic Thinking and Programming
Topic	Variables and Data Representation
	<p><i>Practice 6. Testing and Refining Computational Artifacts</i> 2. Identify and fix errors using a systematic process.</p> <p><i>Practice 7. Communicating About Computing</i> 2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.</p>

Strand	Algorithmic Thinking and Programming	
Topic		Control Structures
<p>ATP.CS.2.a Develop a program that uses sequencing and repetition (i.e., loops) to solve a problem or express ideas.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, students modeled loops in their sequence of steps or program to show repetition. In grade 2, students create a program that utilizes sequencing and loops. In grade 3, students will build on their skills and knowledge to create programs with more refined strategies, such as loops and conditionals, and consider the components of an event.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Programs are made of algorithms and loops <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Create a program utilizing algorithms and loops <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can address this content with or without a computing device.</p> <p>Students create, or in other words, construct a program.</p> <p>Loops are repeated sequences.</p> <p>CONTENT FOCUS</p> <p>The focus is on using sequencing, process, loops, and problem solving to create an algorithm (i.e., program).</p>	

Strand	Algorithmic Thinking and Programming
Topic	Control Structures
	<p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 5. Creating a Computational Artifact</i></p> <ol style="list-style-type: none">1. Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time, and resource constraints, and user expectations.2. Create a computational artifact for practical intent, personal expression, or to address a societal issue. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Algorithmic Thinking and Programming	
Topic	Modularity	
<p>ATP.M.2.a Break down (i.e., decompose) a series of steps and separate the necessary from the unnecessary steps to create a precise sequence of instructions to solve a problem or express an idea.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, students determined what information is necessary to complete a sequence or process. In grade 2, students determine what information is necessary to complete a more complex sequence or process. In grade 3, students will decompose abstractions into sequences to design algorithms.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Decomposition is to break down a series of steps • Abstraction is to use the relevant information <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Decompose a problem into a series of steps • Abstract information relevant to the problem being solved <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can address this content with or without a computing device.</p> <p>Students will work with a more complex sequence of more than three steps.</p> <p>Abstraction is to determine which information is relevant or irrelevant to the problem. Decomposition is taking a problem and breaking it into steps.</p> <p>CONTENT FOCUS</p> <p>The focus is on decomposing and the abstraction of information in a sequence of instructions to solve a problem.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 3. Recognizing and Defining Computational Problems</i></p> <ol style="list-style-type: none"> 2. Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. 	

Strand	Algorithmic Thinking and Programming	
Topic	Program Development	
<p>ATP.PD.2.a Plan and create an artifact to illustrate thoughts, ideas and problems in a sequential (step-by-step) manner (e.g., story map, storyboard, sequential graphic organizer).</p> <p>ATP.PD.2.b Identify and fix (i.e., debug) a multi-step process that includes sequencing.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, students continued to plan and create, as well as began to debug an artifact in order to illustrate thoughts, ideas, and problems in a sequential manner. In grade 2, students continue to plan, create or fix an artifact to illustrate thoughts, ideas, and problems in a sequential manner. In grade 3, students will use these skills to design and create programs to solve a problem. In grade 3, guided questions will be asked to help students think more strategically about how to solve a problem in their program</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Artifacts illustrate thoughts, ideas and problems in a sequential manner • When creating artifacts, it is important to review your artifact for errors <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Plan and create an artifact to illustrate thoughts, ideas and problems in a sequential manner • Evaluate an artifact for errors <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>An artifact is anything created by a human. An artifact could be a visual program, story map, story board or sequential graphic organizer.</p> <p>Debug is defined as "to identify and fix."</p> <p>CONTENT FOCUS</p> <p>The focus is on creating and debugging artifacts and programs.</p>	

Strand	Algorithmic Thinking and Programming
Topic	Program Development
	<p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 5. Creating a Computational Artifact</i></p> <ol style="list-style-type: none">1. Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time, and resource constraints, and user expectations.2. Create a computational artifact for practical intent, personal expression, or to address a societal issue. <p><i>Practice 6. Testing and Refining Computational Artifacts</i></p> <ol style="list-style-type: none">2. Identify and fix errors using a systematic process. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Impacts of Computing	
Topic	Culture	
<p>IC.Cu.2.a Compare and contrast how the use of technology has changed to understand its impact on everyday life.</p> <p>IC.Cu.2.b Describe the ways people use technologies in their daily work and personal lives to understand technology's impact on one's community.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, students recognized the different ways technology impacts and the role technology plays in their lives. In grade 2, students compare and contrast how technology use has changed and the impact it has on their lives positively and negatively. In grade 3, students will identify the impact technology has on everyday life in the local community. Students will identify diverse user needs and how computing devices have features built in to increase accessibility to all users.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Technology is always changing. These changes affect our communities and the role it plays in our lives <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Describe the changes in technology and how we interact with technology over time • Demonstrate how humans adapt technology to serve their needs • Demonstrate how technology can have negative consequences <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Students can identify and explain the connections between their lives and technology and how technology affects their lives.</p> <p>CONTENT FOCUS</p> <p>The focus is on how technology has changed and the impact on students' lives.</p> <p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Computing Culture</i></p> <ol style="list-style-type: none"> 1. Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products. 2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability. 	

Strand	Impacts of Computing
Topic	Culture
	<p><i>Practice 2. Collaborating Around Computing</i></p> <ol style="list-style-type: none">1. Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities. <p><i>Practice 3. Recognizing and Defining Computational Problems</i></p> <ol style="list-style-type: none">1. Identify complex, interdisciplinary, real-world problems that can be solved computationally. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Impacts of Computing	
Topic	Social Interactions	
<p>IC.SI.2.a Compare and contrast safe and responsible behaviors to those that are not when using information and technology.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, students were able to explain safe and responsible behaviors associated with using information and technology while working with others online. In grade 2, students are able to compare and contrast safe and responsible technology behaviors. In grade 3, students will apply a code of conduct to safely and responsibly use technology within an online community. In grade 3, students will collaborate through feedback and reflection to improve a digital artifact and begin to explore how diverse perspectives improves a digital product.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> • Schools develop their own technology rules, regulations and etiquette <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> • Create rules based on the school technology rules, regulations and etiquette on how to use technology • Apply created rules within the classroom and during students' own use of technology • Identify inappropriate actions and the consequences <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Etiquette topics might include cyberbullying, school policy, and safe privacy practices.</p> <p>CONTENT FOCUS</p> <p>The focus is on the responsible use of technology in and out of the classroom.</p>	

Strand	Impacts of Computing
Topic	Social Interactions
	<p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Computing Culture</i></p> <ol style="list-style-type: none">1. Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

Strand	Impacts of Computing
Topic Safety, Law and Ethics	
<p>IC.SLE.2.a Discuss appropriate and ethical uses of technology to guide informed decisions.</p>	<p>Expectations for Learning</p> <p>LEARNING PROGRESSION</p> <p>In grade 1, with guidance, students continued to identify and explain basic security practices that should be applied when using the internet. In grade 2, in concert with cybersecurity activities, students are able to recognize weak security practices, implement secure practices to protect private information to ensure security is not compromised and to explain why it is important to apply these measures. In grade 3, the focus will continue to focus on security, while also giving students more explanation regarding why it is important to keep information secure. Information security and the concept of a digital footprint will be introduced for the first time in grade 3.</p> <p>IMPORTANT CONCEPTS</p> <ul style="list-style-type: none"> Guidelines and practices to stay safe on the internet should be discussed and practiced Awareness of what private information is, what you should and should not share, and what are potential consequences of sharing private information <p>KEY SKILL/PROCEDURES</p> <ul style="list-style-type: none"> Identify practices to stay safe on the internet; Provide examples of situations where these practices should be applied and describe different consequences that may result from not using safe practices <p>Content Elaborations</p> <p>CLARIFICATIONS</p> <p>Provide students guidelines for safe navigation of the internet. Provide students opportunities to practice these guidelines by using teacher-selected internet sites.</p> <p>Provide students guidelines of what constitutes personal information and the consequences of misuse. Provide them guidelines on how to create strong passwords.</p> <p>Students have the opportunity to apply security practices as part of their activities addressing cybersecurity (NI.C.2.a)</p> <p>CONTENT FOCUS</p> <p>The focus is to keep students safe when using the internet.</p>

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	<p>COMPUTER SCIENCE PRACTICES</p> <p><i>Practice 1. Fostering an Inclusive Computing Culture</i></p> <ol style="list-style-type: none">1. Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.2. Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability. <p><i>Practice 2. Collaborating Around Computing</i></p> <ol style="list-style-type: none">1. Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities. <p><i>Practice 7. Communicating About Computing</i></p> <ol style="list-style-type: none">2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.