Essential Skills for Grade 3

Concept	Sub-concept	Standard	Essential Skills
Computing Systems	Devices	3. CS.D.01 Identify internal and external parts of computing devices that function together to form a system.	Name the parts of **computing devices** that work together.
Computing Systems	Hardware & Software	3. CS.HS.01 Identify a variety of ways computer hardware and software work together as a system to accomplish a task.	Distinguish between **hardware** and **software**. Explain how software and hardware depend on each other to function correctly.
Computing Systems	Troubleshooting	3.CS.T.01 Identify and troubleshoot, using appropriate technical terminology, simple hardware and software problems that may occur during everyday use, discuss problems with peers and adults (e.g., viruses, malware, versions of software and non-working applications, refresh screen, closing/reopening application, adjusting volume on headphones or speakers).	Effectively communicate, using appropriate technical language, the specific problem encountered when a device or **program** is not working properly. Perform basic **troubleshooting** strategies.
Networks and the Internet	Network Communication & Organization	3. NI.NCO.01 Recognize how information is sent and received over physical and wireless pathways.	Explain that information moves over the internet along physical wires and **wireless** connections.
Networks and the Internet	Cybersecurity	3. NI.C.01 Discuss basic issues that relate to responsible use of computing devices and describe consequences of inappropriate use in a variety of locations.	Provide examples of how to use **computing devices** responsibly in public places. Outline some of the problems that may result from using public internet access and/or public devices.
Networks and the Internet	Cybersecurity	Not addressed at this level.	
Data Analysis	Storage	3. DA.S.01 Recognize that different types of information are stored in different formats that have varying characteristics, which could include associated programs and storage requirements.	Provide examples of different file types (text, image, video, audio). Identify characteristics of common file types and how to determine those characteristics (for example an image can have.jpg or .png at the end of its name).

Data Analysis	Collection, Visualization & Transformation	3. DA.CVT.01 Collect, organize, and present the same data in a variety of visual formats (e.g., charts, graphs, tables, etc.).	Determine how **data** should be collected and organized so it can be presented in at least three different displays.
Data Analysis	Inference & Models	3. DA.IM.01 Utilize data to make predictions and discuss whether there are sufficient data to make these predictions and extrapolations.	Examine data collected and discuss the reliability of predictions and/or conclusions given that quantity of data.
Algorithms and Programming	Algorithms	3. AP.A.01 Develop and compare multiple algorithms for the same task.	Compose (independently or collaboratively) two or more **algorithms** for the same task. Examine the differences among algorithms for the same task.
Algorithms and Programming	Variables	3. AP.V.01 Create programs that use variables to store and modify grade appropriate data.	Create a **computer program**, using **code** that is provided, in which **variables** are used to store data. Identify the data that is stored in a variable in a computer program that uses a variable.
Algorithms and Programming	Control	3. AP.C.01 Create programs using a programming language that includes sequences, loops, conditionals, and variables to solve a problem or express an idea.	Integrate the use of a variable with a changing value into a computer program. Structure a computer program using **conditionals** (if...then...statements) and **loops** (repeated sequences).
Algorithms and Programming	Modularity	3. AP.M.01 Decompose a simple problem into a precise set of sequences instructions.	Devise an algorithm, a set of ordered instructions, to solve a problem.
Algorithms and Programming	Modularity	3. AP.M.02 Modify, remix, or incorporate portions of an existing program into one's own work, to develop or add more advanced features (grade-level appropriate).	Select one or more features from an existing computer program with teacher guidance and add the feature(s) to an original program.
Algorithms and Programming	Program Development	3. AP.PD.01 Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences while solving simple problems.	Review and revise the plan for a computer program by incorporating feedback from a partner.
Algorithms and Programming	Program Development	3.AP.PD.02 Identify instances of remixing, when ideas are borrowed and treated upon, and provide attribution	Recognize and give credit when using or **remixing** the ideas and the creations of others.
Algorithms and Programming	Program Development	3. AP.PD.03 Analyze and debug an existing program or algorithm that includes sequencing, repetition, and variables in a programming language.	Analyze a program to determine if it is successful. Propose and implement a correction for a flawed portion of a program

Algorithms and Programming	Program Development	3. AP.PD.04 Communicate and explain program development to peers and adults using comments, presentations, and demonstrations.	Using correct terminology, describe the steps taken to develop a computer program.
Impacts of Computing	Culture and Diversity	3. IC.C.01 Identify how different technologies created by people from diverse backgrounds have contributed to computing and helped to change the world.	Investigate various types of common technologies and the backgrounds of their creators (or “improvers”)
Impacts of Computing	Culture and Diversity	3. IC.C.02 Identify potential problems that limit accessibility/usability and how computing devices have built-in features to increase accessibility for all users.	Identify an **accessibility** issue in existing technology. Identify features that improve accessibility/usability of different **computing devices**.
Impacts of Computing	Social Interactions	3. IC.SI.01 Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating online.	Demonstrate appropriate when online and provide examples of appropriate online interactions. Recognize inappropriate online behavior and provide examples of inappropriate online interactions.
Impacts of Computing	Social Interactions	3. IC.SI.02 Identify how computing devices and computational products have been, or can be, improved by incorporating diverse perspectives.	Investigate ways that computing devices and products are used by people of different ages, roles and situations. Explain the features that make devices and programs easier to use for people with different needs, perspectives, and opinions.
Impacts of Computing	Safety, Law & Ethics	3.IC.SLE.01 Introduce intellectual property concepts and identify types of digital data (music, videos, photos) that may have intellectual property rights preventing copying and/or requiring attribution	Outline the types of digital artifacts that may be considered intellectual property. Locate information to identify creator and copyright type.

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These annotations are a collaboration between Maryland Center for Computing Education and the Maryland State Department of Education.