LiftOff with CodeX	Tech Apps Grade 8	Mission 1: Intro	Mission 2: Lift Off	Mission 3: Conserve Energy	Mission 4: Hatch Lock	Mission 5: Alert System	Mission 6: Life Support	Mission 7: Solar Tracking	Mission 8: Prepare Landing	Mission 9: Auto Garden	Mission 10: Explore Surface	Final Project	ADDITIONAL LESSONS	What is Computer Science?	Technology & Trends	Data & Trends	Design Process	Files & File Management	Searches	Digital Information	Digital Citizenship	Cybersecurity	Intellectual Property	OPTIONAL LESSONS	Mission 1 Extensions & CC	Mission 2 Extensions & CC	Mission 3 Extensions & CC	Mission 4 Extensions & CC	Mission 5 Extensions & CC	Mission 6 Extensions & CC	Mission 7 Extensions & CC	Mission 8 Extensions & CC	Mission 9 Extensions & CC	Mission 10 Extensions & CC
(1) Computational thinking - foundations. The student explores the core concepts of computational thinking, a set of problem-solving processes that involve decomposition, pattern recognition, abstraction, and algorithms.	(A) decompose real-world problems into structured parts by using pseudocode		X	X	X	X	X	X	X	X	X	X					X								X	X	X	X	X	X	X	X	X
	(B) analyze the patterns and sequences found in pseudocode and identify its variables		X	X	X	X	X	X	X	X	X	X					X								X	X	X	X	X	X	X	X	X
	(C) practice abstraction by developing a generalized algorithm that can solve different types of problems		X	X	X	X	X	X	X	X	X	X					X								X	X	X	X	X	X	X	X	X
	(D) design a plan collaboratively using pseudocode to document a problem, possible solutions, and an expected timeline for the development of a coded solution											X					X								X	X	X	X	X	X	X	X	X
	(E) develop, compare, and improve algorithms for a specific task to solve a problem		X	X	X	X	X	X	X		X	X					X								X	X	X	X	X	X	X		X
	(F) analyze the benefits of using iteration (code and sequence repetition) in algorithms		X	X	X	X	X	X	X	X	X	X					X								X	X	X	X	X	X	X	X	X
(2) Computational thinking - applications. The student applies the fundamentals of computer science.	(A) construct named variables with multiple data types and perform operations on their values			X	X	X	X	X	X	X	X	X								X							X	X	X	X	X	X	X
	(B) use a software design process to create text-based programs with nested loops that address different subproblems within a real-world context			X	X		X	X	X		X	X					X										X	X		X	X	X		X
	(C) modify and implement previously written code to develop improved programs		X	X	X	X	X	X	X	X	X	X										X				X	X	X	X	X	X	X	X	X
(3) Creativity and innovation - innovative design process. The student takes an active role in learning by using a design process and creative thinking to develop and evaluate solutions, considering a variety of local and global perspectives.	(A) demonstrate innovation in a design process using goal setting and personal character traits, including demonstrating calculated risk-taking and tolerance		X	X	X	X	X	X	X	X	X	X					X									X	X	X	X	X	X	X	X	X
	(B) discuss and implement a design process that includes planning, selecting digital tools to develop, test and evaluate design limitations, and refining a prototype or model		X	X	X	X	X	X	X	X	X	X					X									X	X	X	X	X	X	X	X	X
	(C) identify how the design process is used in various industries																X																	
(4) Creativity and innovation - emerging technologies. The student demonstrates a thorough understanding of the role of technology throughout history and its impact on societies.	(A) evaluate how changes in technology throughout history have impacted various areas of study	X												X	X											X	X	X	X	X	X	X	X	X
	(B) evaluate and predict how global trends impact the development of technology	X												X	X										X	X	X	X	X	X	X	X	X	X
	(C) transfer current knowledge to the learning of newly encountered technologies	X														X						X				X	X	X	X	X	X	X	X	X
(5) Data literacy, management, and representation - collect data. The student uses advanced digital strategies to collect and represent data.	(A) compare and contrast data types, including binary, integers, real numbers, Boolean data, and text-based representations																			X					X									
	(B) apply appropriate search strategies, including keywords, Boolean operators, and limiters, to achieve a specified outcome that includes a variety of file formats																		X															
(6) Data literacy, management, and representation - organize, manage, and analyze data. The student uses digital tools to transform data, make inferences, and predictions.	(A) use digital tools in order to transform data, analyze trends, and predict possibilities and develop steps for the creation of an innovative process or product					X	X	X	X	X	X	X				X			X										X	X	X	X	X	X
(7) Data literacy, management, and representation - communicate and publish results. The student creates digital products to communicate data to an audience for an intended purpose.	(A) use digital tools to communicate and publish data from a product or process to persuade an intended audience		X	X	X	X	X	X	X	X	X	X		X	X	X			X		X	X	X			X	X	X	X	X	X	X	X	X
(8) Digital citizenship - social interactions. The student understands different styles	(A) analyze the importance of managing a digital footprint and how a digital footprint can affect the future																				X													

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of digital communication and that a student's actions online can have a long-term impact.	(B) create and revise formal and informal communications using a feedback process and appropriate digital etiquette																				X													
	(C) collaborate and publish for a global audience on digital platforms such as recording and editing videos using appropriate formal and informal digital etiquette																				X													
(9) Digital citizenship - ethics and laws. The student recognizes and practices responsible, legal, and ethical behavior while using digital tools and resources.	(A) adhere to local acceptable use policy (AUP) and practice and advocate for safe, ethical, and positive online behaviors																				X	X												
	(B) adhere to appropriate intellectual property law when creating digital products																						X											
	(C) create citations and cite sources for a variety of digital forms of intellectual property																						X											
	(D) evaluate the bias of digital information sources, including websites																						X											
(10) Digital citizenship - privacy, safety, and security. The student practices safe, legal and ethical digital behaviors to become a socially responsible digital citizenship.	(A) analyze real-world scenarios to identify cybersecurity threats and propose ways to prevent harm																					X											
	(B) evaluate scenarios or case studies to identify warning signs of a cyberbullying victim such as withdrawal or lack of sleep and predict the outcomes for both the victim and the bully																					X											
(11) Practical technology concepts - processes. The student evaluates and selects appropriate methods or techniques for an independent project and identifies and solves common hardware and software problems using troubleshooting strategies.	(A) combine various file formats for a specific project or audience														X	X					X	X	X											
	(B) share and seek feedback on files in various formats, including text, raster and vector graphics, video and audio files																			X	X													
(12) Practical technology concepts - skills and tools. The student leverages technology systems, concepts, and operations to produce digital artifacts.	(A) integrate use of appropriate technology terminology in scholarly inquiry and dialogue such as classroom discussion and written samples	X													X	X		X			X	X	X			X	X	X	X	X	X	X	X
	(B) implement effective file management strategies independently, including file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies																	X															
	(C) select and use the appropriate platform and tools, including selecting and using software or hardware to transfer data					X	X	X	X	X	X	X			X	X					X	X	X					X	X	X	X	X	X
	(D) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques															X																	
	(E) select and use appropriate shortcuts within applications		X	X	X	X	X	X	X	X	X	X														X	X	X	X	X	X	X	X	X
	(F) apply appropriate troubleshooting techniques and seek technical assistance as needed		X	X	X	X	X	X	X	X	X	X			X	X										X	X	X	X	X	X	X	X	X
	(G) compare types of local and remote data storage such as cloud architecture or local server and select the appropriate type of storage to store and share data																	X															
	(H) select and use productivity tools found in spreadsheet, word processing, and publication applications to create digital artifacts including reports, graphs, and charts with increasing complexity											X		X	X	X					X	X	X			X	X		X	X	X	X	X	X