K-12 CSTA Standards Alignment

K-5	39	30	100%
Grade Level	CSTA Standards	Tynker Courses	CSTA Coverage

Grades K-5				
Identifier	Grade Level	Description	Concept	Tynker Courses
				Core / Elective
1A-CS-01	K-2	Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.	Computing Systems	*Icon Coding*, *All About Computers I*, *Space Cadet*, *Dragon Spells*, *Programming 1A*, *Programming 1B* / *Barbie You Can Be Anything*
1A-CS-02	K-2	Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).	Computing Systems	*All About Computers I*
1A-CS-03	K-2	Describe basic hardware and software problems using accurate terminology.	Computing Systems	*All About Computers I*
1A-NI-04	K-2	Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access.	Networks & the Internet	*All About Computers I*

1A-DA-05	K-2	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.	Data & Analysis	*All About Computers I*	
1A-DA-06	K-2	Collect and present the same data in various visual formats.	Data & Analysis	*All About Computers I*	
1A-DA-07	K-2	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.	Data & Analysis	*All About Computers I*	
1A-AP-08	K-2	Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.	Algorithms & Programming	*Icon Coding* *All About Computers I* *Programming 1A* *Programming 1B*	
1A-AP-09	K-2	Model the way programs store and manipulate data by using numbers or other symbols to represent information.	Algorithms & Programming	*Icon Coding* *Space Cadet* *Dragon Spells* *Programming 1A* *Programming 1B*	*Barbie You Can Be Anything*
1A-AP-10	K-2	Develop programs with sequences and simple loops, to express ideas or address a problem.	Algorithms & Programming	*Icon Coding* *Space Cadet* *Programming 1A* *Programming 1B*	*Barbie You Can Be Anything*
1A-AP-11	K-2	Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.	Algorithms & Programming	*Icon Coding* *Space Cadet* *Dragon Spells* *Programming 1A* *Programming 1B*	*Barbie You Can Be Anything*
1A-AP-12	K-2	Develop plans that describe a program's sequence of events, goals, and expected	Algorithms & Programming	*Programming 1A*	

		outcomes.			
1A-AP-13	K-2	Give attribution when using the ideas and creations of others while developing programs.	Algorithms & Programming	*All About Computers I*	
1A-AP-14	K-2	Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.	Algorithms & Programming	*Icon Coding* *Space Cadet Programming 1A* *Programming 1B*	*Barbie You Can Be Anything*
1A-AP-15	K-2	Using correct terminology, describe steps taken and choices made during the iterative process of program development.	Algorithms & Programming	*Programming 1A* *Programming 1B*	*Barbie You Can Be Anything*
1A-IC-16	K-2	Compare how people live and work before and after the implementation or adoption of new computing technology.	Impacts of Computing	*All About Computers I*	
1A-IC-17	K-2	Work respectfully and responsibly with others online.	Impacts of Computing	*All About Computers I*	
1A-IC-18	K-2	Keep login information private, and log off of devices appropriately.	Impacts of Computing	*All About Computers I*	
1B-CS-01	3-5	Describe how internal and external parts of computing devices function to form a system.	Computing Systems	*All About Computers II*	*WeDo Coding* *micro: bit 101*
1B-CS-02	3-5	Model how computer hardware and software work together as a system to accomplish tasks.	Computing Systems	*All About Computers II*	*WeDo Coding* *micro: bit 101*
1B-CS-03	3-5	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	Computing Systems	*All About Computers II*	*WeDo Coding* *micro: bit 101*
1B-NI-04	3-5	Model how information is broken down into smaller pieces, transmitted as packets through	Networks & the Internet	*All About Computers II*	

		multiple devices over networks and the Internet, and reassembled at the destination.			
1B-NI-05	3-5	Discuss real-world cybersecurity problems and how personal information can be protected.	Networks & the Internet	*All About Computers II*	
1B-DA-06	3-5	Organize and present collected data visually to highlight relationships and support a claim.	Data & Analysis	*All About Computers II*	
1B-DA-07	3-5	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.	Data & Analysis	*All About Computers II*	
1B-AP-08	3-5	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.	Algorithms & Programming	*Dragon Spells* *Programming 100* *Life Science 101* *All About Computers II*	*micro:bit 101*
1B-AP-09	3-5	Create programs that use variables to store and modify data.	Algorithms & Programming	*Physical Science 101* *Math 101* *English 101*	*Augmented Reality* *micro:bit 101* *Artificial Intelligence 101*
1B-AP-10	3-5	Create programs that include sequences, events, loops, and conditionals.	Algorithms & Programming	*Dragon Spells* *Programming 100* *Programming 101* *Programming 102* *Programming 201* *Programming 202* *Life Science 101* *Physical Science 101* *Earth Science 101* *Math 101* *Social Studies 101* *English 101*	*Barbie You Can Be Anything* *Augmented Reality* *WeDo Coding* *micro:bit 101* *Artificial Intelligence 101*

1B-AP-11	3-5	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.	Algorithms & Programming	Dragon Spells Programming 100 Programming 101 Programming 102 Programming 201 Programming 202 Life Science 101 Physical Science 101 Earth Science 101 Math 101 Social Studies 101 English 101 All About Computers II	Barbie You Can Be Anything Augmented Reality WeDo Coding micro:bit 101 Artificial Intelligence 101
1B-AP-12	3-5	Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.	Algorithms & Programming	Dragon Spells Programming 100 Programming 101 Programming 102 Programming 201 Programming 202 Life Science 101 Physical Science 101 Earth Science 101 Math 101 Social Studies 101 English 101 All About Computers II	Barbie You Can Be Anything Augmented Reality WeDo Coding micro:bit 101 Artificial Intelligence 101
1B-AP-13	3-5	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.	Algorithms & Programming	Programming 101 Programming 102 Life Science 101 Physical Science 101 Earth Science 101	micro:bit 101 Artificial Intelligence 101

				Math 101 English 101 All About Computers II	
1B-AP-14	3-5	Observe intellectual property rights and give appropriate attribution when creating or remixing programs.	Algorithms & Programming	All About Computers II	Augmented Reality
1B-AP-15	3-5	Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.	Algorithms & Programming	Dragon Spells Programming 100 Programming 101 Programming 102 Programming 201 Programming 202 Life Science 101 Physical Science 101 Earth Science 101 Math 101 Social Studies 101 English 101 All About Computers II	Barbie You Can Be Anything Augmented Reality WeDo Coding micro:bit 101 Artificial Intelligence 101
1B-AP-16	3-5	Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.	Algorithms & Programming	Programming 201 Earth Science 101	
1B-AP-17	3-5	Describe choices made during program development using code comments, presentations, and demonstrations.	Algorithms & Programming	Programming 100 Programming 201 Earth Science 101	
1B-IC-18	3-5	Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by,	Impacts of Computing	All About Computers II	

		cultural practices.		
1B-IC-19	3-5	Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.	Impacts of Computing	*All About Computers II*
1B-IC-20	3-5	Seek diverse perspectives for the purpose of improving computational artifacts.	Impacts of Computing	*Programming 201* *Programming 202* *Programming 301* *Programming 302* *All About Computers II*
1B-IC-21	3-5	Use public domain or creative commons media, and refrain from copying or using material created by others without permission.	Impacts of Computing	*All About Computers II*

6-12	38	24	100%
Grade Level	CSTA Programming Standards	Tynker Courses	CSTA Coverage in Programming

Grades 6-12					
Identifier	Grade Level	Description	Concept	Tynker Courses	
				Core	Elective
2-CS-01	6-8	Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.	Computing Systems	*MicroPython*	*Drones 101*
2-CS-02	6-8	Design projects that combine hardware and software components to collect and exchange data.	Computing Systems	*MicroPython*	*Drones 101*
2-CS-03	6-8	Systematically identify and fix problems with computing devices and their components.	Computing Systems	*MicroPython*	*Drones 101*
2-NI-04	6-8	Model the role of protocols in transmitting data across networks and the Internet.	Networks & the Internet	--	
2-NI-05	6-8	Explain how physical and digital security measures protect electronic information.	Networks & the Internet	--	
2-NI-06	6-8	Apply multiple methods of encryption to model the secure transmission of information.	Networks & the Internet	--	
2-DA-07	6-8	Represent data using multiple encoding	Data & Analysis	--	

		schemes.		Web Development 101	
2-DA-08	6-8	Collect data using computational tools and transform the data to make it more useful and reliable.	Data & Analysis	Web Development 101	MicroPython
2-DA-09	6-8	Refine computational models based on the data they have generated.	Data & Analysis	--	
2-AP-10	6-8	Use flowcharts and/or pseudocode to address complex problems as algorithms.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	Augmented Reality Drones 101 MicroPython
2-AP-11	6-8	Create clearly named variables that represent different data types and perform operations on their values.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201	Augmented Reality Drones 101 MicroPython Artificial Intelligence 401

				Social Studies 201 English 201 JavaScript 101 Python 101 Python 201	
2-AP-12	6-8	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.	Algorithms & Programming	Programming 201 Programming 202 Programming 301 Programming 302 Math 201 Social Studies 201 English 201 Python 101 Python 201	Artificial Intelligence 101 Artificial Intelligence 401
2-AP-13	6-8	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	Augmented Reality Drones 101 MicroPython Artificial Intelligence 101 Artificial Intelligence 401
2-AP-14	6-8	Create procedures with parameters to organize	Algorithms & Programming	Programming 201 Programming 202	Augmented Reality Drones 101

		code and make it easier to reuse.		Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	MicroPython
2-AP-15	6-8	Seek and incorporate feedback from team members and users to refine a solution that meets user needs.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	Augmented Reality Drones 101 MicroPython
2-AP-16	6-8	Incorporate existing code, media, and libraries into original programs, and give attribution.	Algorithms & Programming	Programming 201 Programming 202	Augmented Reality Drones 101

				Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	MicroPython Artificial Intelligence 101
2-AP-17	6-8	Systematically test and refine programs using a range of test cases.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 Life Science 201 Physical Science 201 Earth Science 201 Math 201 Social Studies 201 English 201 Web Development 101 JavaScript 101 Python 101 Python 201	Augmented Reality Drones 101 MicroPython Artificial Intelligence 101 Artificial Intelligence 401
2-AP-18	6-8	Distribute tasks and maintain a project timeline when collaboratively developing computational	Algorithms & Programming	Programming 201 Programming 202	MicroPython

		artifacts.		Programming 301 Programming 302 Web Development 101 JavaScript 101 Python 101 Python 201	
2-AP-19	6-8	Document programs in order to make them easier to follow, test, and debug.	Algorithms & Programming	Programming 300 Web Development 101 JavaScript 101 Python 101 Python 201	MicroPython
2-IC-20	6-8	Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.	Impacts of Computing	--	
2-IC-21	6-8	Discuss issues of bias and accessibility in the design of existing technologies.	Impacts of Computing	--	
2-IC-22	6-8	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.	Impacts of Computing	--	
2-IC-23	6-8	Describe tradeoffs between allowing information to be public and keeping information private and secure.	Impacts of Computing	--	
3A-CS-01	9-10	Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.	Computing Systems	AP CSA AP CSP	
3A-CS-02	9-10	Compare levels of abstraction and interactions between application software, system software, and hardware layers.	Computing Systems	--	

3A-CS-03	9-10	Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.	Computing Systems	--	
3A-NI-04	9-10	Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.	Networks & the Internet	--	
3A-NI-05	9-10	Give examples to illustrate how sensitive data can be affected by malware and other attacks.	Networks & the Internet	--	
3A-NI-06	9-10	Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.	Networks & the Internet	*Web Development 101*	
3A-NI-07	9-10	Compare various security measures, considering tradeoffs between the usability and security of a computing system.	Networks & the Internet	*AP CSA*	
3A-NI-08	9-10	Explain tradeoffs when selecting and implementing cybersecurity recommendations.	Networks & the Internet	--	
3A-DA-09	9-10	Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.	Data & Analysis	*AP CSP*	
3A-DA-10	9-10	Evaluate the tradeoffs in how data elements are organized and where data is stored.	Data & Analysis	*AP CSP* *AP CSA* *Data Science 1*	
3A-DA-11	9-10	Create interactive data visualizations using software tools to help others better understand real-world phenomena.	Data & Analysis	*AP CSP* *AP CSA* *Data Science 1*	

3A-DA-12	9-10	Create computational models that represent the relationships among different elements of data collected from a phenomenon or process.	Data & Analysis	*AP CSP* *AP CSA* *Data Science 1*	
3A-AP-13	9-10	Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.	Algorithms & Programming	*Web Development 101* *JavaScript 101* *Python 101* *Python 201* *AP CSP* *AP CSA* *Data Science 1*	*MicroPython* *Intro to Programming and Art* *Artificial Intelligence 401*
3A-AP-14	9-10	Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.	Algorithms & Programming	*AP CSP* *AP CSA* *Data Science 1*	
3A-AP-15	9-10	Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made.	Algorithms & Programming	*AP CSP* *AP CSA*	
3A-AP-16	9-10	Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.	Algorithms & Programming	*Web Development 101* *JavaScript 101* *Python 101* *Python 201* *AP CSP* *AP CSA* *Data Science 1*	*MicroPython* *Intro to Programming and Art*
3A-AP-17	9-10	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.	Algorithms & Programming	*Web Development 101* *JavaScript 101* *Python 101* *Python 201*	*MicroPython* *Intro to Programming and Art* *Artificial Intelligence 401*

				AP CSP AP CSA Data Science 1	
3A-AP-18	9-10	Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.	Algorithms & Programming	Data Science 1	
3A-AP-19	9-10	Systematically design and develop programs for broad audiences by incorporating feedback from users.	Algorithms & Programming	Web Development 101 JavaScript 101 Python 101 Python 201 Data Science 1	MicroPython
3A-AP-20	9-10	Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.	Algorithms & Programming	AP CSA	
3A-AP-21	9-10	Evaluate and refine computational artifacts to make them more usable and accessible.	Algorithms & Programming	Web Development 101 JavaScript 101 Python 101 Python 201 AP CSP AP CSA Data Science 1	Intro to Programming and Art MicroPython Artificial Intelligence 401
3A-AP-22	9-10	Design and develop computational artifacts working in team roles using collaborative tools.	Algorithms & Programming	AP CSP AP CSA Data Science 1	
3A-AP-23	9-10	Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.	Algorithms & Programming	AP CSP AP CSA	MicroPython

3A-IC-24	9-10	Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	Impacts of Computing	*Web Development 101* *AP CSP* *AP CSA* *Data Science 1*	*Intro to Programming and Art* *MicroPython* *Artificial Intelligence 401*
3A-IC-25	9-10	Test and refine computational artifacts to reduce bias and equity deficits.	Impacts of Computing	*AP CSP* *Data Science 1*	
3A-IC-26	9-10	Demonstrate ways a given algorithm applies to problems across disciplines.	Impacts of Computing	*Web Development 101* *JavaScript 101* *Python 101* *Python 201* *AP CSP* *AP CSA* *Data Science 1*	*MicroPython* *Artificial Intelligence 401*
3A-IC-27	9-10	Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.	Impacts of Computing	*AP CSA*	
3A-IC-28	9-10	Explain the beneficial and harmful effects that intellectual property laws can have on innovation.	Impacts of Computing	*AP CSP*	
3A-IC-29	9-10	Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users.	Impacts of Computing	*Web Development 101*	*Artificial Intelligence 401*
3A-IC-30	9-10	Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.	Impacts of Computing	*AP CSP* *AP CSA*	
3B-CS-01	11-12	Categorize the roles of operating system software.	Computing Systems	--	

3B-CS-02	11-12	Illustrate ways computing systems implement logic, input, and output through hardware components.	Computing Systems		*MicroPython*
3B-NI-03	11-12	Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).	Networks & the Internet	*AP CSA*	
3B-NI-04	11-12	Compare ways software developers protect devices and information from unauthorized access.	Networks & the Internet	--	
3B-DA-05	11-12	Use data analysis tools and techniques to identify patterns in data representing complex systems.	Data & Analysis	*Data Science 1* *AP CSA*	
3B-DA-06	11-12	Select data collection tools and techniques to generate data sets that support a claim or communicate information.	Data & Analysis	*Data Science 1* *AP CSA*	
3B-DA-07	11-12	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.	Data & Analysis	*Data Science 1*	
3B-AP-08	11-12	Describe how artificial intelligence drives many software and physical systems.	Algorithms & Programming	*AP CSP*	*MicroPython* *Artificial Intelligence 401*
3B-AP-09	11-12	Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem.	Algorithms & Programming	*JavaScript 101* *Python 101* *Python 201* *AP CSP* *Data Science 1*	*MicroPython* *Artificial Intelligence 401*
3B-AP-10	11-12	Use and adapt classic algorithms to solve computational problems.	Algorithms & Programming	*Web Development 101* *JavaScript 101*	*Intro to Programming and Art* *MicroPython*

				Python 101 Python 201 AP CSP AP CSA Data Science 1	Artificial Intelligence 401
3B-AP-11	11-12	Evaluate algorithms in terms of their efficiency, correctness, and clarity.	Algorithms & Programming	Web Development 101 JavaScript 101 Python 101 Python 201 AP CSP AP CSA Data Science 1	Intro to Programming and Art MicroPython Artificial Intelligence 401
3B-AP-12	11-12	Compare and contrast fundamental data structures and their uses.	Algorithms & Programming	Web Development 101 Python 201 AP CSP AP CSA Data Science 1	Intro to Programming and Art
3B-AP-13	11-12	Illustrate the flow of execution of a recursive algorithm.	Algorithms & Programming	AP CSP AP CSA	
3B-AP-14	11-12	Construct solutions to problems using student-created components, such as procedures, modules and/or objects.	Algorithms & Programming	AP CSP AP CSA	
3B-AP-15	11-12	Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.	Algorithms & Programming	AP CSP AP CSA Data Science 1	
3B-AP-16	11-12	Demonstrate code reuse by creating programming solutions using libraries and APIs.	Algorithms & Programming	AP CSP AP CSA	

3B-AP-17	11-12	Plan and develop programs for broad audiences using a software life cycle process.	Algorithms & Programming	AP CSP AP CSA	
3B-AP-18	11-12	Explain security issues that might lead to compromised computer programs.	Algorithms & Programming	AP CSP AP CSA	
3B-AP-19	11-12	Develop programs for multiple computing platforms.	Algorithms & Programming	AP CSP AP CSA	
3B-AP-20	11-12	Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project.	Algorithms & Programming	AP CSP	
3B-AP-21	11-12	Develop and use a series of test cases to verify that a program performs according to its design specifications.	Algorithms & Programming	Programming 201 Programming 202 Programming 300 Programming 301 Programming 302 AP CSP AP CSA Data Science 1	
3B-AP-22	11-12	Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).	Algorithms & Programming	Web Development 101 Data Science 1 JavaScript 101 Python 101 Python 201 AP CSP AP CSA	MicroPython Intro to Programming and Art
3B-AP-23	11-12	Evaluate key qualities of a program through a process such as a code review.	Algorithms & Programming	Web Development 101 JavaScript 101 Python 101 Python 201	MicroPython Intro to Programming and Art

				AP CSP AP CSA	
3B-AP-24	11-12	Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.	Algorithms & Programming	JavaScript 101 Python 101 Python 201	Intro to Programming and Art
3B-IC-25	11-12	Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.	Impacts of Computing	AP CSP AP CSA	
3B-IC-26	11-12	Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.	Impacts of Computing	--	
3B-IC-27	11-12	Predict how computational innovations that have revolutionized aspects of our culture might evolve.	Impacts of Computing	AP CSA	
3B-IC-28	11-12	Debate laws and regulations that impact the development and use of software.	Impacts of Computing	--	