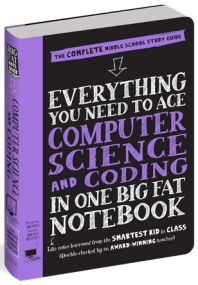

THE BIG FAT NOTEBOOK® SERIES

Everything You Need to Ace Computer Science and Coding in One Big Fat Notebook

NEXT GENERATION SCIENCE STANDARDS

MS-PS4: Waves and their Applications in Technologies for Information Transfer

MS-ETS1: Engineering Design

CSTA COMPUTER SCIENCE STANDARDS LEVEL 2

GRADE 6-8	COMPUTING SYSTEMS	2-CS-01, 02, 03
	01	Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.
	02	Design projects that combine hardware and software components to collect and exchange data.
	03	Systematically identify and fix problems with computing devices and their components.

GRADE 6-8	NETWORKS AND THE INTERNET	2-NI-04, 05, 06
	04	Model the role of protocols in transmitting data across networks and the Internet.
	05	Explain how physical and digital security measures protect electronic information.
	06	Apply multiple methods of encryption to model the secure transmission of information.

GRADE 6-8	DATA AND ANALYSIS	2-DA-07, 08, 09
	07	Represent data using multiple encoding schemes.
	08	Collect data using computational tools and transform the data to make it more useful and reliable.
	09	Refine computational models based on the data they have generated.

GRADE 6-8	ALGORITHMS AND PROGRAMMING	2-AP-10, 12, 13, 14, 15, 16, 17, 18, 19
	10	Use flowcharts and/or pseudocode to address complex problems as algorithms. Variables 2-AP-11 Create clearly named variables that represent different data types and perform operations
	12	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.
	13	Decompose problems into parts to facilitate the design, implementation, and review of programs.
	14	Create procedures with parameters to organize code and make it easier to reuse.
	15	Seek and incorporate feedback from team members and users to refine a solution that meets user needs.
	16	Incorporate existing code, media, and libraries into original programs, and give attribution.
	17	Systematically test and refine programs using a range of test cases.
	18	Distribute tasks and maintain a project timeline when collaboratively developing
	19	Document programs in order to make them easier to follow, test, and debug.

GRADE 6-8	IMPACTS OF COMPUTING	2-IC-20, 22, 23
	20	Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.
	22	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.
	23	Describe tradeoffs between allowing information to be public and keeping information private and secure.

COMMON CORE STATE STANDARDS

GRADE 6-8	READING SCIENCE AND TECHNICAL SUBJECTS	CCSS.ELA-LITERACY.RST.6-8.1, 2, 3, 4, 5, 6, 7, 8, 9, 10
	1	Cite specific textual evidence to support analysis of science and technical texts.
	2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
	3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	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*.
	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.
	6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
	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).
	8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	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.
	10	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

GRADE 6-8	WRITING	CCSS.ELA-LITERACY.WHST.6-8.2, 2.A, 2.B, 2.C, 2.D, 2.E, 2.F, 4, 6, 7, 8, 9, 10
	2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
	2.A	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
	2.B	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
	2.C	Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
	2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.
	2.E	Establish and maintain a formal style and objective tone.
	2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented.
	4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
	7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
9	Draw evidence from informational texts to support analysis, reflection, and research.
10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

GRADE 6-8	SPEAKING & LISTENING	CCSS.ELA-LITERACY.SL.6.1, 1.A, 1.C, 1.D, 2, 3, 4, 5, 6,
1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.	
1.A	Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.	
1.C	Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.	
1.D	Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	
2	Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.	
3	Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	
4	Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	
5	Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	
6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 for specific expectations.)	

COMMON CORE MATH STANDARDS

GRADE 6-8	MATH PRACTICES	MP.1, 2, 4, 5, 6, 7, 8
1	Make sense of problems and persevere in solving them	
2	Reason abstractly and quantitatively	
4	Model with mathematics	
5	Use appropriate tools strategically	
6	Attend to precision	
7	Look for and make use of structure	
8	Look for and express regularity in repeated reasoning	

GRADE 6-8	MATH CONTENT	CCSS.MATH.CONTENT.6.NS.C.5, 6, 6.A, 6.B, 6.C, 7, 7.A, 7.B, 7.C, 7.D, 8, 8.SP.A.4
5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	
6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	

6.A	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself
6.B	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
6.C	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
7	Understand ordering and absolute value of rational numbers.
7.A	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
7.B	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
7.C	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
7.D	Distinguish comparisons of absolute value from statements about order.
8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*