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|  | <h2>F.20 Computer Science - Grades 11-12</h2> | | |
| PROVIDER/PUBLISHER / MATERIAL INFORMATION (TO BE COMPLETED BY PROVIDER/PUBLISHER) | | | |
| Provider/Publisher / Imprint: | | Grade(s): | |
| Title of Student Edition: | | Student Edition ISBN: | |
| Title of Teacher Edition: | | Teacher Edition ISBN: | |
| Title of SE Workbook: | | SE Workbook ISBN: | |
| PUBLISHER CITATION VIDEO: Must be viewed before starting the review of this set of materials. | | | |
| Citation Video Link: | | | |
| Citation video certification: | I certify that I have viewed the citation video for this specific publisher and set of materials. | | |
| Digital Material Log In (if applicable): | Website: | Username: | Password: |
| | | | |
| SCORING (TO BE COMPLETED BY REVIEWER AND FACILITATOR) | | | |
| Reviewer Number: | | Date: | |

Section 1: Standards Review: Computer Science

PROVIDER/PUBLISHER INSTRUCTIONS:

- Provider/Publisher citations for this section will refer to the **Teacher Edition (teacher-facing core material)** and/or **Student Edition/Student Workbook (student-facing core material)**. The cited Teacher Edition, Student Edition, and/or Student Workbook should correspond with titles and ISBNs entered on the Form F cover page, whether in print, online, or both. The review set submitted to the summer review institute should also correspond with what is cited on the Form F. If the review set is an online platform only, then that is what should be cited on the Form F and submitted for review by the review teams.
- For this section, the provider/publisher will enter two citations per standard (Columns C and G). Each citation should direct the reviewer to a specific location in the materials that best meets the standard. The citations should be concise and should allow the reviewer to easily determine that all components of the standard have been met. **Each citation should cover no more than 3 pages within the materials.**
 - o **Columns D and H:** Enter one citation in Column D and one citation in Column H from either the **Teacher Edition (teacher-facing core material)** OR **Student Edition/Student Workbook (student-facing core material)**. Each citation should direct the reviewer to a specific location in the materials that best meets the standard.
- The material will be scored for alignment with each standard as “Meets expectations,” “Partially meets expectations,” or “Does not meet expectations” based on the citations provided.
 - o **NOTE: You may not use a citation more than once across ALL sections of the rubric.**

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| Reviewer directions for Computer Science Standards Review: | <p>Columns D-G: The provider/publisher will provide a citation from the Teacher Edition (teacher-facing core material) OR Student Edition/Student Workbook (student-facing core material) (print and/or digital) for each standard. Review the cited material and score the material by determining the degree to which it meets the standard:</p> <ul style="list-style-type: none"> o M = Meets the standard o P = Partially meets the standard o D = Does not meet the standard <p>Evidence for the publisher citations is required <i>only</i> if you score the materials with a D. For your evidence for each standard that scores a D, choose one of the options from the dropdown menu in Column G. If the reason for scoring the materials with a D is not one of the dropdown options, enter your own evidence statement in the cell in Column G.</p> <p>o Each score cell (column E) will turn green as you score the materials.</p> | <p>Columns H-K: The provider/publisher will provide a citation from the Teacher Edition (teacher-facing core material) OR Student Edition/Student Workbook (student-facing core material) (print and/or digital) for each standard. Review the cited material, score the material by determining the degree to which it meets the standard, and provide evidence from the material to support your determination:</p> <ul style="list-style-type: none"> o M = Meets the standard o P = Partially meets the standard o D = Does not meet the standard <p>o Each score cell (column I) and evidence cell (column K) will turn green as you score the materials.</p> |
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| Criteria # | Identifier | F.21 Computer Science Grades 11-12 | Provider/Publisher Citation | Score | If Scored D: Reviewer's Evidence for Publisher Citation | Provider/Publisher Citation | Score | Required: Reviewer's Evidence for Publisher Citation | Comments, other citations, notes |
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LEVEL 3B: GRADES 11-12 COMPUTER SCIENCE STANDARDS

COMPUTING SYSTEMS

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| 1 | 3B-CS-01 | Categorize the roles of operating system software. | | | | | | | |
| 2 | 3B-CS-02 | Illustrate ways computing systems implement logic, input, and output through hardware components. | | | | | | | |

NETWORKS AND THE INTERNET

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| 3 | 3B-NI-03 | Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology). | | | | | | | |
| 4 | 3B-NI-04 | Compare ways software developers protect devices and information from unauthorized access. | | | | | | | |

DATA AND ANALYSIS

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| 5 | 3B-DA-05 | Use data analysis tools and techniques to identify patterns in data representing complex systems. | | | | | | | |
| 6 | 3B-DA-06 | Select data collection tools and techniques to generate data sets that support a claim or communicate information. | | | | | | | |

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| 7 | 3B-DA-07 | Evaluate the ability of models and simulations to test and support the refinement of hypotheses. | | | | | | | |
| ALGORITHMS AND PROGRAMMING | | | | | | | | | |
| 8 | 3B-AP-08 | Describe how artificial intelligence drives many software and physical systems. | | | | | | | |
| 9 | 3B-AP-09 | Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem. | | | | | | | |
| 10 | 3B-AP-10 | Use and adapt classic algorithms to solve computational problems. | | | | | | | |
| 11 | 3B-AP-11 | Evaluate algorithms in terms of their efficiency, correctness, and clarity. | | | | | | | |
| 12 | 3B-AP-12 | Compare and contrast fundamental data structures and their uses. | | | | | | | |
| 13 | 3B-AP-13 | Illustrate the flow of execution of a recursive algorithm. | | | | | | | |
| 14 | 3B-AP-14 | Construct solutions to problems using student-created components, such as procedures, modules and/or objects. | | | | | | | |
| 15 | 3B-AP-15 | Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution. | | | | | | | |
| 16 | 3B-AP-16 | Demonstrate code reuse by creating programming solutions using libraries and APIs. | | | | | | | |
| 17 | 3B-AP-17 | Plan and develop programs for broad audiences using a software life cycle process. | | | | | | | |
| 18 | 3B-AP-18 | Explain security issues that might lead to compromised computer programs. | | | | | | | |
| 19 | 3B-AP-19 | Develop programs for multiple computing platforms. | | | | | | | |
| 20 | 3B-AP-20 | Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project. | | | | | | | |
| 21 | 3B-AP-21 | Develop and use a series of test cases to verify that a program performs according to its design specifications. | | | | | | | |
| 22 | 3B-AP-22 | Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality). | | | | | | | |
| 23 | 3B-AP-23 | Evaluate key qualities of a program through a process such as a code review. | | | | | | | |

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| 24 | 3B-AP-24 | Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems. | | | | | | | |
| IMPACTS OF COMPUTING | | | | | | | | | |
| 25 | 3B-IC-25 | Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society. | | | | | | | |
| 26 | 3B-IC-26 | Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society. | | | | | | | |
| 27 | 3B-IC-27 | Predict how computational innovations that have revolutionized aspects of our culture might evolve. | | | | | | | |
| 28 | 3B-IC-28 | Debate laws and regulations that impact the development and use of software. | | | | | | | |

Section 2: Computer Science Content Review

PROVIDER/PUBLISHER INSTRUCTIONS:

- Provider/Publisher citations for this section will refer to the **Teacher Edition (teacher-facing core material)** and/or **Student Edition/Student Workbook (student-facing core material)**. The cited Teacher Edition, Student Edition, and/or Student Workbook should correspond with titles and ISBNs entered on the Form F cover page, whether in print, online, or both. The review set submitted to the summer review institute should also correspond with what is cited on the Form F. If the review set is an online platform only, then that is what should be cited on the Form F and submitted for review by the review teams. If the review set is in print only, then that is what should be cited on the Form F and submitted for review by the review teams.
- For this section, the provider/publisher will enter two citations per criterion (Columns C and G). Each citation should direct the reviewer to a specific location in the materials that best meets the criterion. The citations should be concise and should allow the reviewer to easily determine that all components of the criterion have been met. **Each citation should cover no more than 3 pages within the materials.**
 - o **Columns C and G:** Enter one citation in Column C and one citation in Column G from either the **Teacher Edition (teacher-facing core material)** OR **Student Edition/Student Workbook (student-facing core material)**. Each citation should direct the reviewer to a specific location in the materials that best meets the criterion.
- The material will be scored for alignment with each criterion as “Meets expectations,” “Partially meets expectations,” or “Does not meet expectations” based on the citations provided.
 - o **NOTE: You may not use a citation more than once across ALL sections of the rubric.**

Reviewer directions for Computer Science Content Review:

Columns C-F: The provider/publisher will provide a citation from the **Teacher Edition (teacher-facing core material)** OR **Student Edition/Student Workbook (student-facing core material) (print and/or digital)** for each criterion. Review the cited material and score the material by determining the degree to which it meets the criterion:

- o M = Meets the criterion
- o P = Partially meets the criterion
- o D = Does not meet the criterion

Evidence for the publisher citations is required *only* if you score the materials with a D. For your evidence for each criterion that scores a D, choose one of the options from the dropdown menu in Column F. If the reason for scoring the materials with a D is not one of the dropdown options, enter your own evidence statement in the cell in Column F.

o Each score cell (column D) will turn green as you score the materials.

Columns G-J: The provider/publisher will provide a citation from the **Teacher Edition (teacher-facing core material)** OR **Student Edition/Student Workbook (student-facing core material) (print and/or digital)** for each criterion. Review the cited material, score the material by determining the degree to which it meets the criterion, and **provide evidence from the material to support your determination:**

- o M = Meets the criterion
- o P = Partially meets the criterion
- o D = Does not meet the criterion

o Each score cell (column H) and evidence cell (column J) will turn green as you score the materials.

| Criteria # | Grades 9-12 Computer Science Content Criteria | Provider/Publisher Citation | Score | If Scored D: Reviewer's Evidence for Publisher Citation | Provider/Publisher Citation | Score | Required: Reviewer's Evidence for Publisher Citation | Comments, other citations, notes |
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FOCUS AREA 1 COMPUTATIONAL CONCEPTS
Instructional materials provide strategies to develop students' skills that are crucial to understanding computational concepts, including sequencing, looping, parallelism, events, conditionals, operators, and data.

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| 1 | Instructional materials provide strategies for students to design and implement algorithms using a. sequencing of instructions; b. conditional execution; and c. iteration. | | | | | | | |
| 2 | Instructional materials provide strategies for students to design and implement algorithms that use sequence and selection including: nested ifs (e.g. if, if/else, if, switch case); nested Loops (e.g. for, for each, while, do while); and Iteration and recursion. | | | | | | | |
| 3 | Instructional materials provide strategies for students to create computational models that represent the relationships among different elements of data collected from a process. | | | | | | | |

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| 4 | Instructional materials provide strategies for students to identify mathematical concepts (e.g. random number generation, vocabulary) related to computer science and to recognize the similarities and differences between math and computer science algorithms. | | | | | | | |
| FOCUS AREA 2 COMPUTATIONAL PRACTICES: Instructional materials provide strategies to develop students' skills that are crucial to understanding computational practices, including experimenting and iterating; testing and debugging; and reusing and remixing. | | | | | | | | |
| 5 | Instructional materials provide strategies for students to create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. | | | | | | | |
| 6 | Instructional materials provide strategies for students to evaluate algorithms in their efficiency, correctness, and clarity by using a series of test cases to verify that the program performs according to its design specification. | | | | | | | |
| FOCUS AREA 3 COMPUTATIONAL PERSPECTIVES: Instructional materials provide strategies to develop students' skills that are crucial to understanding computational perspectives, including expressing, connecting, and questioning. | | | | | | | | |
| 7 | Instructional materials provide strategies for students to create a computational artifact for practical intent, personal expression, or to address a societal issue. | | | | | | | |
| 8 | Instructional materials provide strategies for students to explore and explain advancing and emerging technologies and predict how computational innovations will revolutionize aspects of our culture based on knowledge of the historical timeline of computers and technology. | | | | | | | |
| FOCUS AREA 4 ACCESSIBILITY AND EQUITY: | | | | | | | | |
| 9 | Instructional materials provide all students (e.g. those who read below grade level, students with special needs, gifted students, and ELL) with extensive opportunities to encounter and comprehend grade-level and complex concepts within the scope of computer science. | | | | | | | |
| FOCUS AREA 5 TEACHER SUPPORT: | | | | | | | | |
| 10 | Instructional materials provide a detailed list of requisite software, libraries, hardware and tools. | | | | | | | |

| Section 2: All Content Review | | | | |
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| PROVIDERS/PUBLISHERS: <ul style="list-style-type: none"> The All Content tab will be completed solely by the reviewers. They will score each criterion and provide evidence for their score from the material based on their overall review of the material. You will not provide any citations for this tab. The material will be scored for alignment with each criterion as “Meets expectations,” “Partially meets expectations,” or “Does not meet expectations”. | | | | |
| Reviewer directions for All Content Review: | | Columns C-F: The criteria presented on this tab will be scored and evidence provided based on your overall review of the materials. Review the material, score the material by determining the degree to which it meets each criterion, and provide evidence from the material to support your determination: <ul style="list-style-type: none"> o M = Meets the criterion o P = Partially meets the criterion o D = Does not meet the criterion Your evidence should speak to where in the materials you have found the evidence as well as what is in the materials that supports the score given. <ul style="list-style-type: none"> o Each score cell (column C) and evidence cell (column E) will turn green as you score the materials. o Any cells grayed out do not require a score or evidence. | | |
| Criteria # | All Content Criteria | Score | Required: Reviewer's Evidence from Material | Comments, citations, notes |
| FOCUS AREA 1 RESOURCES AND SUPPORTS FOR TEACHERS AND STUDENTS: Instructional materials provide teacher resources to support planning and supports for all students. | | | | |
| 1 | Instructional materials provide a list of lessons in the Teacher Edition or teacher-facing core material (in print or clearly distinguished/accessible as a teacher-facing core material in digital materials), cross-referencing the standards addressed and providing an estimated instructional time for each lesson, chapter, and unit. | | | |
| 2 | Instructional materials integrate opportunities for digital learning, including interactive digital components, and digital assessment. | | | |
| 3 | Instructional materials incorporate features that aid students and teachers in making meaning of the text. | | | |
| 4 | Instructional materials provide appropriate linguistic support for English Learners and Culturally and Linguistically Diverse students, and accommodations and modifications for other special populations that will support their regular and active participation in learning content. | | | |
| FOCUS AREA 2 ASSESSMENT: Instructional materials offer teachers a variety of assessment resources and tools to collect ongoing data about student progress related to the standards. | | | | |

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| 5 | Instructional materials provide a variety of assessments that measure student progress in all strands of the standards for the content under review. <i>(Adopted New Mexico Content Standards for 2023: 7-12 Career and Technical Education Standards; CSTA K-12 Computer Science Standards; K-12 Health Education Standards; K-12 Physical Education Standards)</i> | | | |
| 6 | Instructional materials provide multiple formative and summative assessments, clearly defining which standards are being assessed through content and language objectives. | | | |
| 7 | Instructional materials provide appropriate assessment alternatives for English Learners, Culturally and Linguistically Diverse students, advanced students, and special needs students. | | | |
| FOCUS AREA 3 CULTURAL AND LINGUISTIC PERSPECTIVES AND RESPONSIVENESS: Instructional materials represent a variety of cultural and linguistic perspectives and highlight diversity in culture and language through multiple perspectives. | | | | |
| 8 | Instructional materials inform culturally and linguistically responsive pedagogy by affirming students' backgrounds in the materials themselves and in the student discussions. | | | |
| 9 | Instructional materials include tools and resources to relate the content area appropriately to diversity in culture and language. | | | |
| 10 | Instructional materials include tools and resources that demonstrate multiple perspectives in a specific concept. | | | |
| 11 | Instructional materials engage students in critical reflection about their own lives and societies, including cultures past and present in New Mexico. | | | |
| 12 | Instructional materials address multiple ethnic descriptions, interpretations, or perspectives of events and experiences. | | | |