



# Python with CodeX – TEKS Technology Applications Grade 7 Curriculum

Updated 06/04/2024 by Jill Jones

| KNOWLEDGE & SKILLS   | Technology Applications Grade 7 No prerequisite  | Mission / Lesson  |
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| <p><b>(1) Computational thinking - foundations.</b> The student explores the core concepts of computational thinking, a set of problem-solving processes that involve decomposition, pattern recognition, abstraction, and algorithms.</p> | (A) decompose real-world problems into structured parts by using flowcharts  | Design Process<br>Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Mission 9, Remix 4, Mission 12</i><br><i>Remix 5, Mission 13</i><br><i>Pixel Images, CodeX &amp; Images</i><br><i>CodeX &amp; Audio, CodeX &amp; Line Art</i>   |
|  | (B) analyze the patterns and sequences found in flowcharts   | Design Process<br>Remix 3   |
|  | (C) identify abstraction and analyze how an algorithm the student created can be generalized to solve additional problems                                      | Mission 3, Design Process<br>Remix 1, Mission 8, Remix 3<br><i>Mission 9, Remix 4,</i><br><i>Mission 10, Mission 11, Mission 12</i><br><i>Remix 5, Mission 13</i>   |
|  | (D) design a plan collaboratively using flowcharts to document a problem, possible solutions, and an expected timeline for the development of a coded solution | Design Process<br>Remix 1, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Remix 5, Mission 13</i><br><i>Pixel Images, CodeX &amp; Images</i><br><i>CodeX &amp; Audio, CodeX &amp; Line Art</i>  |
|  | (E) analyze different techniques used in debugging and apply them to an algorithm  | Mission 3, Mission 4, Remix 1<br>Mission 5, Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Mission 9, Remix 4, Mission 10,</i><br><i>Mission 11, Mission 12</i><br><i>Remix 5, Mission 13</i><br><i>Pixel Images, CodeX &amp; Images</i><br><i>CodeX &amp; Audio, CodeX &amp; Line Art</i> |
|  | (F) analyze the benefits of using iteration (code and sequence repetition) in algorithms   | Design Process<br>Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Mission 9, Remix 4, Mission 10,</i><br><i>Mission 11, Mission 12</i><br><i>Remix 5, Mission 13</i>  |
| <p><b>(2) Computational thinking - applications.</b> The student applies the fundamentals of computer science.</p>   | (A) manipulate and rename variables and describe different data types  | Mission 3, Mission 4, Remix 1<br>Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br>Digital Information   |

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|   |  | <i>Mission 9, Remix 4, Mission 10, Mission 11, Mission 12<br/>Remix 5, Mission 13<br/>Pixel Images, CodeX &amp; Images<br/>CodeX &amp; Audio, CodeX &amp; Line Art</i>   |
|   | (B) use a software design process to create text-based programs with nested loops that address different subproblems within a real-world context                                     | Mission 4, Design Process<br>Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Remix 4, Remix 5, Mission 13</i>  |
| <b>(3) Creativity and innovation – innovative design process.</b> 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) resolve challenges in design processes independently using goal setting and personal character traits such as demonstrating responsibility and advocating for self appropriately | Design Process, Remix 1<br>Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Mission 9, Remix 4, Mission 10, Mission 11, Mission 12<br/>Remix 5, Mission 13<br/>Pixel Images, CodeX &amp; Images<br/>CodeX &amp; Audio, CodeX &amp; Line Art</i> |
|   | (B) discuss and implement a design process that includes planning and selecting digital tools to develop and refine a prototype or model through trial and error                     | Design Process, Remix 1<br>Remix 2, Remix 3<br><i>Remix 4, Remix 5, Mission 13</i>   |
|   | (C) identify how the design process is used in various industries  | Design Process   |
| <b>(4) Creativity and innovation – emerging technologies.</b> The student demonstrates a thorough understanding of the role of technology throughout history and its impact on societies.   | (A) discuss how changes in technology throughout history have impacted various areas of study  | Technology & Trends<br><i>What is Computer Science?</i>  |
|   | (B) discuss how global trends impact the development of technology   | Technology & Trends<br><i>What is Computer Science?</i>  |
|   | (C) transfer current knowledge to the learning of newly encountered technologies   | Mission 2, Mission 3, Remix 1<br>Mission 5, Remix 2<br>Mission 7, Remix 3<br>Data & Trends, Cybersecurity<br><i>Mission 9, Remix 4<br/>Remix 5, Mission 13</i>   |
| <b>(5) Data literacy, management, and representation – collect data.</b> The student uses advanced digital strategies to collect and represent data.  | (A) demonstrate how data can be represented in a binary number system  | Digital Information<br><i>Mission 9, Remix 4</i>   |
|   | (B) evaluate advanced search strategies, including keywords, Boolean operators, and limiters   | Searches   |
| <b>(6) Data literacy, management, and representation – organize, manage, and analyze data.</b> The student uses digital tools to transform data, make inferences, and predictions.  | (A) use digital tools in order to transform data to analyze trends and make inferences and predictions   | Data & Trends, Searches  |
| <b>(7) Data literacy, management, and representation – communicate and</b>  | (A) use digital tools to communicate and display data from a product or process to inform or persuade an intended audience   | Technology & Trends<br>Data & Trends, Searches<br>Digital Citizenship, Cybersecurity   |

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| <p><b>publish results.</b> The student creates digital products to communicate data to an audience for an intended purpose.</p>  |   | <p>Intellectual Property<br/><i>Mission 10, Mission 11, Mission 12</i><br/><i>What is Computer Science?</i></p>  |
| <p><b>(8) Digital citizenship - social interactions.</b> The student understands different styles of digital communication and that a student's actions online can have a long-term impact.</p>  | (A) classify actions as having a positive or negative effect on a digital footprint   | Digital Citizenship  |
|  | (B) create and revise formal and informal communications using a feedback process and appropriate digital etiquette   | Digital Citizenship  |
|  | (C) collaborate on digital platforms such as recording a video conference presentation using appropriate formal and informal digital etiquette                  | Digital Citizenship  |
| <p><b>(9) Digital citizenship - ethics and laws.</b> The student recognizes and practices responsible, legal, and ethical behavior while using digital tools and resources.</p>  | (A) adhere to local acceptable use policy (AUP) and practice and model safe, ethical, and positive online behaviors   | Digital Citizenship<br>Cybersecurity   |
|  | (B) explain the importance of intellectual property laws, including the benefits of protection for content owners, and the consequences of violating these laws | Intellectual Property  |
|  | (C) create citations and cite sources for a variety of digital forms of intellectual property   | Intellectual Property  |
|  | (D) evaluate how various types of media, including social media, and technology can be used to exaggerate and misrepresent information                          | Intellectual Property  |
| <p><b>(10) Digital citizenship - privacy, safety, and security.</b> The student practices safe, legal and ethical digital behaviors to become a socially responsible digital citizenship.</p>  | (A) describe and model ways to protect oneself from real-world cybersecurity attacks  | Cybersecurity  |
|  | (B) analyze the negative impacts of cyberbullying on the victim and the bully   | Cybersecurity  |
| <p><b>(11) Practical technology concepts - processes.</b> 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.</p> | (A) choose a variety of digital tools to create, share and communicate digital artifacts  | <p>Technology &amp; Trends<br/>Data &amp; Trends<br/>Digital Citizenship<br/>Cybersecurity<br/>Intellectual Property<br/><i>Mission 13, Pixel Images</i><br/><i>CodeX &amp; Images, CodeX &amp; Audio</i><br/><i>CodeX &amp; Line Art</i></p>  |
| <p><b>(12) Practical technology concepts - skills and tools.</b> The student leverages technology systems, concepts, and operations to produce digital artifacts.</p>  | (A) demonstrate proficiency in the appropriate use of technology terminology in projects through team collaboration and communication                           | <p>Mission 2, Mission 3,<br/>Mission 4, Remix 1<br/>Mission 5, Mission 6, Remix 2<br/>Mission 7, Mission 8, Remix 3<br/>Technology &amp; Trends<br/>Data &amp; Trends<br/>Files &amp; File Management<br/>Digital Citizenship, Cybersecurity<br/>Intellectual Property<br/><i>Mission 9, Remix 4, Mission 10,</i><br/><i>Mission 11, Mission 12</i><br/><i>Remix 5, Mission 13</i></p> |
|  | (B) demonstrate effective file management strategies such as file naming conventions, local and   | <p>Mission 2<br/>Files &amp; File Management</p>   |

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|  | remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies with assistance  | <i>Pixel Images, CodeX &amp; Images, CodeX &amp; Audio, CodeX &amp; Line Art</i> |
| (C) select and use the appropriate platform and tools, including selecting and using software or hardware for a defined task   | Mission 1<br>Technology & Trends<br>Data & Trends<br>Digital Citizenship, Cybersecurity<br>Intellectual Property<br><i>Pixel Images, CodeX &amp; Images, CodeX &amp; Audio, CodeX &amp; Line Art</i>  |  |
| (D) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques   | Data & Trends   |  |
| (E) select and use appropriate shortcuts within applications   | Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br><i>Mission 9, Remix 4, Mission 10, Mission 11, Mission 12</i><br><i>Remix 5, Mission 13</i><br><i>Pixel Images, CodeX &amp; Images, CodeX &amp; Audio, CodeX &amp; Line Art</i>  |  |
| (F) research and test potential solutions to solve hardware and software problems  | Mission 1, Mission 2<br>Mission 4, Remix 1<br>Mission 5, Mission 6, Remix 2<br>Mission 7, Mission 8, Remix 3<br>Technology & Trends<br>Data & Trends<br><i>Mission 9, Remix 4, Mission 10, Mission 11, Mission 12</i><br><i>Remix 5, Mission 13</i><br><i>Pixel Images, CodeX &amp; Images, CodeX &amp; Audio, CodeX &amp; Line Art</i> |  |
| (G) use a variety of types of local and remote data storage to store or share data such as cloud architecture or local server  | Files & File Management   |  |
| (H) select and use productivity tools found in spreadsheet, word processing, and publication applications to create digital artifacts such as reports, graphs, and charts with increasing complexity | Mission 1<br>Technology & Trends<br>Data & Trends<br>Digital Citizenship, Cybersecurity<br>Intellectual Property<br><i>What is Computer Science?</i>  |  |