

# Grade 8

## Computational Thinker CT

### Ab. Abstraction CT.AB

- 1 Design a function using a programming language that demonstrates abstraction. Example: Create a program that utilizes functions in an effort remove repetitive sequences of steps. CT.AB.1
  - 2 Explain how abstraction is used in a given function. Example: Examine a set of block-based code and explain how abstraction was used. CT.AB.2
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### Al. Algorithms CT.AL

- 3 Create an algorithm using a programming language that includes the use of sequencing, selections, or iterations. Example: Use a block-based or script programming language Step 1: Start Step 2: Declare variables a, b and c. Step 3: Read variables a, b and c. Step 4: If a>b If a>c Display a is the largest number. Else Display c is the largest number. Else If b>c Display b is the largest number. Else Display c is the greatest number. Step 5: Stop CT.AL.3
  - 4 Create a function to simplify a task. Example:  $(3)^8 = 3*3*3*3*3*3*3*3$ ; = (Average) used in a spreadsheet to average a given list of grades. CT.AL.4
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### PD. Programming & Development CT.PD

- 5 Discuss the efficiency of an algorithm or technology used to solve complex problems CT.PD.5
  - 6 Describe how algorithmic processes and automation increase efficiency CT.PD.6
  - 7 Create a program that includes selection, iteration, or abstraction, and initializes, and updates, at least two variables. Examples: Make a game, interactive card, story, or adventure game CT.PD.7
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## Citizen of a Digital Culture CDC

### SPS. Safety, Privacy, & Security CDC.SPS

- 8 Compare and contrast common methods of securing data. CDC.SPS
- 9 Secure a file or other data. Examples: lock spreadsheet cell(s), password protect, encrypt. CDC.SPS

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**LEB. Legal & Ethical Behavior** CDC.LEB

- 10 Analyze different modes of social engineering and their effectiveness. Examples: Phishing, hoaxes, impersonation, baiting, spoofing. CDC.LEB.10
- 11 Advocate for positive, safe, legal, and ethical habits when creating and sharing digital content. Example: Students create a brochure that highlights the consequences of illegally downloading media. CDC.LEB.11

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**DI. Digital Identity** CDC.DI

- 12 Cite evidence of the positive and negative effects of data permanence on personal and professional digital identity. CDC.DI.12

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**IC. Impact of Computing** CDC.IC

- 13 Evaluate the impact of digital globalization on public perception and ways Internet censorship can affect free and equitable access to information. CDC.IC.13
- 14 Analyze current events related to computing and their effects on education, the workplace, individuals, communities, and global society. CDC.IC.14
- 15 Critique computational artifacts, including options for accessibility for all users, with respect to the needs of a global culture. CDC.IC.15

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**Global Collaborator** GC**CC. Creative Communications** GC.CC

- 16 Present content designed for specific audiences through an appropriate medium. Example: Create and share a help video for a senior's center that provides tips for online safety. GC.CC.16
- 17 Communicate and publish individually or collaboratively to persuade peers, experts, or community about issues and problems. GC.CC.17

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**DT. Digital Tools** GC.DT

- 18 Type 40 words per minute with 95% accuracy using appropriate keyboarding techniques. GC.DT.18

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**SI. Social Interactions** GC.SI

- 19 Critique the impacts of censorship as it impacts global society. Example: Create a presentation outlining the social implications of limiting access to web content by favoring or blocking particular products or websites. GC.SI.19
  - 20 Examine an artifact that demonstrates bias through distorting, exaggerating, or misrepresenting data and redesign it using factual, relevant, unbiased content to more accurately reflect the truth. GC.SI.20
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## Computing Analyst CA

### D. Data CA.D

- 21 Differentiate types of data storage and apply most efficient structure. Examples: Stack, array, queue, table, database. CA.D.21
  - 22 Encrypt and decrypt various data. Example: Create and decipher a message sent in a secret code. CA.D.22
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### S. Systems CA.S

- 23 Design a digital artifact to propose a solution for a content-related problem. Example: Create a presentation outlining how to create a cost-efficient method to melt snow on roads during the winter. CA.S.23
  - 24 Compare and contrast common methods of cybersecurity. Example: Discuss how password protections and encryption are similar and different. CA.S.24
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### MS. Modeling & Simulation CA.MS

- 25 Create a model that represents a system. Example: Food chain, supply and demand. CA.MS.25
  - 26 Create a simulation that tests a specific model. Examples: Demonstrate that pressure changes with temperature in a controlled environment; demonstrate that rocket design affects the height of a rocket's launch; demonstrate that the amount of water changes the height of a plant. CA.MS.26
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## Innovative Designer ID

### HCP. Human/Computer Partnerships ID.HCP

- 27 Analyze assistive technologies and how they improve the quality of life for users. Example: Research multiple speech to text technologies and write a persuasive essay in favor of one over another. ID.HCP.27
  - 28 Analyze assistive technologies and how they improve the quality of life for users. Example: Research multiple speech to text technologies and write a persuasive essay in favor of one over another. ID.HCP.28
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### DT. Design Thinking ID.DT

- 29 Create an artifact to solve a problem using ideation and iteration in the problem-solving process. Examples: Create a public service announcement or design a computer program, game, or application. ID.DT.29