

Foundations of Computing

Summarize computational problems. [CIS.HS.8.1](#)

- a** Identify component parts or subproblems of a simple problem. [CIS.HS.8.1.A](#)
- b** Identify subproblems that make up a larger computational problem. [CIS.HS.8.1.B](#)
- c** Explain how solutions to multiple subproblems work together to solve a larger problem. [CIS.HS.8.1.C](#)
- d** Define the term algorithm and explain its relationship to computational solutions. [CIS.HS.8.1.D](#)

Develop and use abstractions in computational artifacts. [CIS.HS.8.2](#)

- a** Define abstraction in terms of computer science and provide an example of how abstraction is used to manage complexity. [CIS.HS.8.2.A](#)
- b** Represent equivalent data using different encoding schemes (e.g., binary, unicode, Morse code, student-created codes). [CIS.HS.8.2.B](#)
- c** Use abstraction to manage complexity or avoid duplication of effort. [CIS.HS.8.2.C](#)
- d** Use and extend existing procedures within a program based on their documentation. [CIS.HS.8.2.D](#)
- e** Identify repetitive elements of program code and develop functionally equivalent versions that reduce redundant code or hide the complexity of a task. [CIS.HS.8.2.E](#)

Create computational artifacts. [CIS.HS.8.3](#)

- a** Create variables to store data in a program. [CIS.HS.8.3.A](#)
- b** Use and update data stored in variables. [CIS.HS.8.3.B](#)
- c** Develop programs that use sequences of statements, loops, and conditional statements. [CIS.HS.8.3.C](#)
- d** Design and develop computational artifacts that address personally- or socially relevant concerns. [CIS.HS.8.3.D](#)

Use data to understand and model real-world situations. [CIS.HS.8.4](#)

- a** Filter or transform data using a computational tool. [CIS.HS.8.4.A](#)
- b** Explain the results of a data-driven investigation and a reproducible process for computing the results. [CIS.HS.8.4.B](#)

c Use and modify a computer simulation to understand a real-world system. CIS.HS.8.4.C

d Adjust inputs to an existing simulation to gain additional insights. CIS.HS.8.4.D

Test and iteratively refine computational solutions CIS.HS.8.5

a Describe an iterative design process used in creating computational artifacts. CIS.HS.8.5.A

b Apply an iterative design process to solve problems, both independently and collaboratively. CIS.HS.8.5.B

c Locate and diagnose errors in program code. CIS.HS.8.5.C

d Correct errors in program code. CIS.HS.8.5.D