Wyoming Computer Science

Grades 6–8

Computing Systems

Devices (D), Hardware & Software (HS), and Troubleshooting (T)

1 Design and refine a project that combines hardware and software components to collect and exchange data. [Practice 5.1 Creating Computational Artifacts] `8.CS.HS.01`

The Proficient student:

a Designs a project that combines hardware and software components to collect and exchange data.

b Refines a project that combines hardware and software components to collect and exchange data.

Network & The Internet

Network, Communication, & Organization (NCO) and Cybersecurity (C)

1 Critique physical and digital procedures that could be implemented to protect electronic data/information. [Practice 7.3 Communicating About Computing] `8.NI.C.01`

The Proficient student critiques physical and digital procedures that could be implemented to protect electronic data/information.

Data Analysis

Storage (S), Collection, Visualization, & Transformation (CVT), and Inference & Models (IM)

1 Using computational tools, transform collected data to make it more useful and reliable. [Practice 6.3 Testing and Refining Computational Artifacts] `8.DA.CVT.01`

The Proficient student uses computational tools to:

a Transform data to improve reliability by removing errors.

b Highlight or expose relationships in the data.

Algorithms & Programming

Algorithms (A), Variables (V), Control (C), Modularity (M), and Program Development (PD)

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1 Using grade appropriate content and complexity, create clearly named variables that represent different data types and perform operations on their values. [Practice 5.1 & 5.2 Creating Computational Artifacts] `8.AP.V.01`

The Proficient student:

a Creates clearly named variables.

b Creates variables that represent different data types.

c Performs operations on the values of variables.

2 Using grade appropriate content and complexity, design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. [Practice 5.1 & 5.2 Creating Computational Artifacts] `8.AP.C.01`

The Proficient student designs and iteratively develops programs that include:

a Nested loops.

b Compound conditionals.

3 Using grade appropriate content and complexity, decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. [Practice 3.2 Recognizing and Defining Computational Problems] `8.AP.M.01`

The Proficient student decomposes problems and subproblems into parts for the design, implantation, and review of programs.

4 Using grade appropriate content and complexity, document programs in order to make them easier to follow, test, and debug. [Practice 7.2 Communicating About Computing] `8.AP.PD.04`

The Proficient student documents programs in order to make them easier to follow, test, and debug.

Impacts of Computing

Culture (C), Social Interactions (SI), and Safety, Law, and Ethics (SLE)

1 Describe impacts associated with computing technologies that affect people's everyday activities and career options. [Practice 7.2 Communicating About Computing] `8.IC.C.01`

The Proficient student:

a Describes impacts associated with computing technologies that affect people's everyday activities.

b Describes impacts associated with computing technologies that affect people's career options.

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2. Practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior. [Practice 2.1 Collaborating Around Computing] [Practice 7.3 Communicating About Computing] `8.IC.SI.02`

   The Proficient student:

   a. Collaborates using tools to connect with peers when creating a computational artifact.

   b. Practices grade-level appropriate behavior and responsibilities while participating in an online community.

   c. Identifies and reports inappropriate behavior while participating in an online community, when applicable.

3. Using grade level appropriate content and complexity, discuss the legal, social, and ethical impacts associated with software development and use, including both positive and malicious intent. [Practice 1.1 Fostering an Inclusive Computing Culture] [Practice 7.2 Communicating About Computing] `8.IC.SLE.02`

   The Proficient student:

   a. Describes tradeoffs between allowing information to be public and keeping information private and secure, and

   b. With regard to positive and malicious intent:

      i. Discusses the legal impacts associated with software development and use,

      ii. Discusses the social impacts associated with software development and use,

      iii. Discusses the ethical impacts associated with software development and use.