

High School

Concept: Computing Systems (CS) HS.CS

D. Subconcept: Devices (D) HS.CS.D

- 1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. HS.CS.D.1

HS. Subconcept: Hardware and Software (HS) HS.CS.HS

- 1 Describe levels of abstraction and interactions between application software, system software, and hardware layers. HS.CS.HS.1

T. Subconcept: Troubleshooting (T) HS.CS.T

- 1 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. HS.CS.T.1

Concept: Networks and the Internet (NI) HS.NI

C. Subconcept: Cybersecurity (C) HS.NI.C

- 1 Describe how sensitive data can be affected by malware and other attacks. HS.NI.C.1
- 2 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. HS.NI.C.2
- 3 Compare various security measures, considering tradeoffs between the usability and security of a computing system. HS.NI.C.3

NCO. Subconcept: Network, Communication, and Organization (NCO) HS.NI.NCO

- 1 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing. HS.NI.NCO.1

Concept: Data and Analysis (DA) HS.DA

CVT. Subconcept: Collection, Visualization and Transformation (CVT) HS.DA.CVT

- 1 Create interactive data visualizations using software tools to help others better understand real-world phenomena. HS.DA.CVT.1

S. Subconcept: Storage (S) HS.DA.S

- 1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. HS.DA.S.1
- 2 Evaluate the tradeoffs in how and where data is stored. HS.DA.S.2

IM. Subconcept: Inference and Models (IM) HS.DA.IM

- 1 Analyze computational models to better understand real-world phenomena. HS.DA.IM.1
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Concept: Algorithms and Programming (AP) HS.AP**A. Subconcept: Algorithms (A)** HS.AP.A

- 1 Create prototypes that use algorithms for practical intent, personal expression, or to address a societal issue HS.AP.A.1
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V. Subconcept: Variables (V) HS.AP.V

- 1 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables. HS.AP.V.1
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C. Subconcept: Control (C) HS.AP.C

- 1 Justify the selection of specific control structures and explain the benefits and drawbacks of choices made, when tradeoffs involve readability and program performance. HS.AP.C.1
 - 2 Use events that initiate instructions to design and iteratively develop computational artifacts HS.AP.C.2
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M. Subconcept: Modularity (M) HS.AP.M

- 1 Decompose problems into smaller components using constructs such as procedures, modules, and/or objects. HS.AP.M.1
 - 2 Use procedures within a program, combinations of data and procedures, or independent but interrelated programs to design and iteratively develop computational artifacts. HS.AP.M.2
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PD. Subconcept: Program Development (PD) HS.AP.PD

- 1 Evaluate and refine computational artifacts to make them more usable and accessible. HS.AP.PD.1
 - 2 Use team roles and collaborative tools to design and iteratively develop computational artifacts. HS.AP.PD.2
 - 3 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs. HS.AP.PD.
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Concept: Impacts of Computing (IC) HS.IC**C. Subconcept: Culture (C)** HS.IC.C

- 1 Evaluate the ways access to computing impacts personal, ethical, social, economic, and cultural practices. HS.IC.C.1
- 2 Test and refine computational artifacts to reduce bias and equity deficits. HS.IC.C.2
- 3 Demonstrate ways a given algorithm applies to problems across disciplines. HS.IC.C.3

SI. Subconcept: Social Interactions (SI) HS.IC.SI

- 1 Analyze the impact of collaborative tools and methods that increase social connectivity. HS.IC.SI.1

SLE. Subconcept: Safety, Law, and Ethics (SLE) HS.IC.SLE

- 1 Explain the beneficial and harmful effects that intellectual property laws can have on innovation. HS.IC.SLE.1
- 2 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. HS.IC.SLE.2
- 3 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. HS.IC.SLE.3