

Standards:

Standard Identifier: [6-8.DA.8](#)

Grade Range: **6–8**

Content Area: **Computer Science**

Category: **Data & Analysis**

Standard:

Collect data using computational tools and transform the data to make it more useful.

Descriptive Statement

Data collection has become easier and more ubiquitous. The cleaning of data is an important transformation for ensuring consistent format, reducing noise and errors (e.g., removing irrelevant responses in a survey), and/or making it easier for computers to process. Students build on their ability to organize and present data visually to support a claim, understanding when and how to transform data so information can be more easily extracted. Students also transform data to highlight or expose relationships.

For example, students could use computational tools to collect data from their peers regarding the percentage of time **technology** is used for school work and entertainment, and then create digital displays of their data and findings. Students could then transform the data to highlight relationships representing males and females as percentages of a whole instead of as individual counts. (CA CCSS for Mathematics 6.SP.4, 7.SP.3, 8.SP.1, 8.SP.4)

Alternatively, students could collect data from online forms and surveys, from a sensor, or by scraping a web page, and then transform the data to expose relationships. They could highlight the distribution of data (e.g., words on a web page, readings from a sensor) by giving quantitative measures of center and variability. (CA CCSS for Mathematics 6.SP.5.c, 7.SP.4)

Standard Identifier: [6-8.IC.20](#)

Grade Range: **6–8**

Content Area: **Computer Science**

Category: **Impacts of Computing**

Standard:

Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

Descriptive Statement

Advancements in computer **technology** are neither wholly positive nor negative. However, the ways that people use computing technologies have tradeoffs. Students consider current events related to broad ideas, including privacy, communication, and automation.

For example, students could compare and contrast the impacts of computing technologies with the impacts of other systems developed throughout history such as the Pony Express and US Postal System. (HSS.7.8.4)

Alternatively, students could identify tradeoffs for both personal and professional uses of a variety of computing technologies. For instance, driverless cars can increase convenience and reduce accidents, but they may be susceptible to hacking. The emerging industry will reduce the number of taxi and shared-ride drivers, but may create more software engineering and cybersecurity jobs.

California Environmental Principles and Concepts:

Principle I

The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Principle II

The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

California Common Core State Standards Connections:

ELA/Literacy

WHST.6-8.7: Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

WHST.6–8.8: Gather relevant information from multiple print and digital sources (primary and secondary), using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Mathematics

6.RP.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

6.EE.6: Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.