

BIG IDEAS

Decomposition and abstraction improve our ability to understand and solve problems.

Algorithms describe the process of solving computational problems.

Programming is a tool that allows us to implement computational thinking.

Data representation allows us to understand and efficiently solve problems.

Learning Standards

Curricular Competencies	Content
<p><i>Students are expected to do the following:</i></p> <p>Reasoning and analyzing</p> <ul style="list-style-type: none"> Use reasoning and logic to analyze and apply mathematical ideas Estimate algorithmic correctness Demonstrate fluent and flexible thinking Use tools or technology to analyze relationships and test conjectures Model mathematics in contextualized experiences <p>Understanding and solving</p> <ul style="list-style-type: none"> Develop, demonstrate, and apply conceptual understanding of mathematical ideas Visualize to explore and illustrate mathematical concepts and relationships Apply flexible strategies to solve problems in both abstract and contextualized situations Engage in problem-solving experiences that are connected to place, story, cultural practices, and perspectives relevant to First Peoples communities, the local community, and other cultures <p>Communicating and representing</p> <ul style="list-style-type: none"> Communicate mathematical thinking in many ways Use mathematical and computer science vocabulary and language to contribute to discussions Represent mathematical ideas in a variety of ways Explain and justify mathematical and computational ideas 	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> ways to access variables in memory ways in which data structures are organized in memory uses of multidimensional arrays algorithms, including sorting and searching performance analysis by Big-O notation recursive problem solving persistent memory encapsulation of data ways to model mathematical problems

Learning Standards (continued)

Curricular Competencies	Content
<p>Connecting and reflecting</p> <ul style="list-style-type: none"> • Reflect on mathematical and computational thinking • Use mathematics and computer science to support personal choices • Connect mathematical and computer science concepts to each other and to other areas and personal interests • Incorporate First Peoples worldviews and perspectives to make connections to computer science concepts 	

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