

BIG IDEAS

Decomposition and abstraction improve our ability to understand, reduce complexity, 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 represent basic data types • basic programming concepts • variable scope • ways to construct and evaluate logical statements • use of control flow to manipulate program execution • development of algorithms to solve problems in multiple ways • techniques for operations on and searching of arrays and lists • problem decomposition through modularity • uses of computing for financial analysis • 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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