**Area of Learning: MATHEMATICS — Computer Science Grade 11**

**BIG IDEAS**

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| **Decomposition** helps us solve difficult problems by managing complexity. |  | **Algorithms** are essential in solving problems computationally. |  | Programming is a tool that allows us to implement **computational thinking**. |  | **Solving problems** is a creative process. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to do the following:*  Reasoning and modelling   * Develop **flexible thinking** to analyze and create algorithms * Explore, **analyze**, and apply mathematical ideas and computer science concepts using **reason**, **technology**, and **other tools** * **Model** with mathematics in **situational contexts** * **Think creatively** and with **curiosity and** **wonder** when exploring problems   Understanding and solving   * Develop, demonstrate, and apply conceptual understanding through experimentation, **inquiry**, and problem solving * **Visualize** to explore and illustrate computer science concepts  and relationships * Apply **flexible and strategic approaches** to **solve problems** * Solve problems with **persistence and a positive disposition** * Engage in problem-solving experiences **connected** with place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures | *Students are expected to know the following:*   * 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** ofarrays and lists * problem decomposition through **modularity** * uses of computing for **financial analysis** * ways to model **mathematical problems** |

**Area of Learning: MATHEMATICS — Computer Science Grade 11**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Communicating and representing   * **Explain and justify** mathematical ideas and **decisions** in **many ways** * **Represent** computer science ideas in concrete, pictorial, symbolic, and pseudocode forms * Use computer science and mathematical vocabulary and language to contribute to **discussions** in the classroom * Take risks when offering ideas in classroom **discourse**   Connecting and reflecting   * **Reflect** on mathematical and computational thinking * **Connect mathematical and computer science concepts** with each other, other areas, and personal interests * Use **mistakes** as **opportunities to advance learning** * **Incorporate** First Peoples worldviews, perspectives, **knowledge**, and **practices** to make connections with computer science concepts |  |