**Area of Learning: MATHEMATICS — History of Mathematics Grade 11**

**BIG IDEAS**

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| Mathematics has **developed** over many centuries and continues  to evolve. |  | Mathematics is a global **language** used to understand  the world. |  | **Societal needs** across cultures have influenced the development of mathematics. |  | **Tools and technology** are catalysts for mathematical development. |  | Notable **mathematicians**  in history nurtured a sense of play and curiosity that led to the development of many areas in mathematics. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to do the following:*  Reasoning and modelling   * Develop **thinking strategies** to solve historical puzzles and  play games * Explore, **analyze**, and apply historical mathematical ideas using **reason**, **technology**,and **other tools** * **Think** **creatively** and with **curiosity and wonder** when  exploring problems   Understanding and solving   * Critique multiple strategies used to solve mathematical problems throughout history * Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, **inquiry,** and problem solving * **Visualize** to explore and illustrate mathematical 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  and cultural practices, including local First Peoples | *Students are expected to know the following:*   * **number and number systems:**   + written and oral numbers   + zero   + rational and irrational numbers   + pi   + prime numbers * **patterns and algebra:**   + early algebraic thinking   + variables   + early uses of algebra   + Cartesian plane   + notation   + Fibonacci sequence * **geometry:**   + of lines, angles, triangles   + Euclid’s five postulates   + geometric constructions   + developments through time |

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**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Communicating and representing   * **Explain and justify** mathematical ideas and **decisions** in **many ways** * Use historical symbolic representations to explore mathematics * Use 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 thinking * **Connect mathematical concepts** with each other, with other areas,  and with personal interests * Reflect on the consequences of mathematics culturally, socially,  and politically * Use **mistakes** as **opportunities to advance learning** * **Incorporate** First Peoples worldviews, perspectives, **knowledge**,  and **practices** to make connections with mathematical concepts | * **probability and statistics:**    + Pascal’s triangle   + games involving probability   + **early beginnings** of statistics and probability * **tools and technology:** development over time, from clay tablets to modern-day calculators and computers * **cryptography:**    + use of ciphers, encryption, and decryption throughout history   + modern uses of cryptography in war and digital applications |