**Area of Learning: MATHEMATICS — Pre-calculus Grade 12**

**BIG IDEAS**

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| Using **inverses** is the foundation of solving equations and can be extended to relationships between functions. |  | Understanding the characteristics of families of **functions** allows us to model and understand relationshipsand to build connections between classes of functions. |  | **Transformations** of shapes extend to functions and relations in all of their representations. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to do the following:*Reasoning and modelling* Develop **thinking strategies** to solve puzzles and play games
* Explore, **analyze**, and apply mathematical ideas using **reason**, **technology**, and **other tools**
* **Estimate reasonably** and demonstrate **fluent, flexible, and strategic** thinking about number
* **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 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, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures
 | *Students are expected to know the following:** **transformations** of functions and relations
* **exponential** functions and equations
* **geometric** sequences andseries
* **logarithms:** operations, functions, and equations
* **polynomial** functions and equations
* **rational** functions
* **trigonometry:** functions, equations, and identities
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**Area of Learning: MATHEMATICS — Pre-calculus Grade 12**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Communicating and representing* **Explain and justify** mathematical ideas and **decisions** in **many ways**
* **Represent** mathematical ideas in concrete, pictorial, and symbolic forms
* 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, other areas, and personal interests
* Use **mistakes** as **opportunities to advance learning**
* **Incorporate** First Peoples worldviews, perspectives, **knowledge**, and **practices** to makeconnections with mathematical concepts
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