**Area of Learning: MATHEMATICS — Apprenticeship Mathematics Grade 12**

**BIG IDEAS**

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| **Design** involves investigating, planning, creating, and evaluating. |  | Constructing **3D objects** often requires a 2D plan. |  | **Transferring mathematical skills** between problems requires conceptual understanding and flexible thinking. |  | **Proportional reasoning** is used to make sense of multiplicative relationships. |  | Choosing a tool based on required precision and accuracy is important when **measuring**. |

**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-solvingexperiences **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:** **measuring:** using tools with graduated scales; conversions using metric and imperial
* similar **triangles:** including right-angle trigonometry
* 2D and 3D shapes: including area, surface area, volume, and nets
* **3D objects** and their views (isometric drawing, orthographic projection)
* **mathematics in the workplace**
* **financial literacy:** business investments and loans
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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**
* **Represent** mathematical ideas in concrete, pictorial, and symbolic forms
* Use mathematical vocabulary and language to contribute to **discussions** in the classroom
* Take riskswhen 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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