BIG IDEAS

Working with **diagrams** is essential to geometric thinking.	Geometry is about working with **variation** and invariance.	Working with and on **definitions** is central in geometry.	**Geometry** stories and applications vary across cultures and time.	A written **proof** is the endpoint to the process of proving.

Learning Standards

Curricular Competencies

Students are expected to be able to do the following:

Reasoning and analyzing

- Engage in **spatial reasoning** in a dynamic environment
- Use **reasoning and logic** to analyze and apply mathematical ideas
- **Estimate** reasonably
- Demonstrate **fluent and flexible thinking** of number
- Use **tools or technology** to analyze relationships and test conjectures
- **Model** mathematics in contextualized experiences

Understanding and solving

- 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 local First Peoples communities, the local community, and other cultures

Communicating and representing

- Communicate mathematical thinking in **many ways**
- Use mathematical vocabulary and language to contribute to mathematical **discussions**
- **Represent** mathematical ideas in a variety of ways
- Explain and justify mathematical ideas

Content

Students are expected to know the following:

- geometric **constructions**
- **circle geometry**
- **constructing tangents**
- transformations of 2D shapes, including the **isometries** and **affine transformations**
- **perspective** and **non-Euclidean geometries**

Learning Standards (continued)

Curricular Competencies	Content
Connecting and reflecting • **Reflect** on mathematical thinking • Use mathematics to support personal choices • Connect mathematical concepts to each other and to **other areas and personal interests** • **Incorporate** First Peoples worldviews and perspectives to **make connections** to mathematical concepts	