ÉCOLE SECONDAIRE WINDSOR SECONDARY SCHOOL

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COURSE OUTLINE

SUBJECT: Foundations of Mathematics 12 **Teacher:** Dr. Pruner

Big Ideas:

Probabilistic thinking informs decision making in situations involving chance and uncertainty.	Modelling data requires an understanding of a variety of functions.	Mathematical analysis informs financial decisions.	Through explorations of spatial relationships, we can develop a geometrical appreciation of the world around us.

CURRICULAR COMPETENCIES:

Students are expected to be able 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

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 make connections with mathematical concepts

CONTENT:

Students are expected to know the following:

- geometric explorations: (Unit 4)
  - constructions
  - conics
  - fractals
- graphical representations of polynomial, logarithmic, exponential, and sinusoidal functions (Unit 1)
- regression analysis (Unit 1)
- combinatorics (Unit 2)
- odds, probability, and expected value (Unit 2)
- financial planning (Unit 3)

RESOURCE MATERIALS:

Smart Phone (or Tablet) with Desmos Test Mode application

Foundations of Mathematics 12 (Nelson)

Locally developed supplemental packages

The objective of the course is not simply to introduce certain mathematical concepts, but also to make you understand and be able to explain them to others. It should also help to improve your problem solving, analyzing, communicating and logical thinking skills. You will learn how to ask questions, to communicate mathematically, and how to present and verify your solutions.

I expect that you are an active and engaged participant. I expect that you will participate in classroom discussions, ask questions, respond to questions and participate in the regular discourse in each lesson.

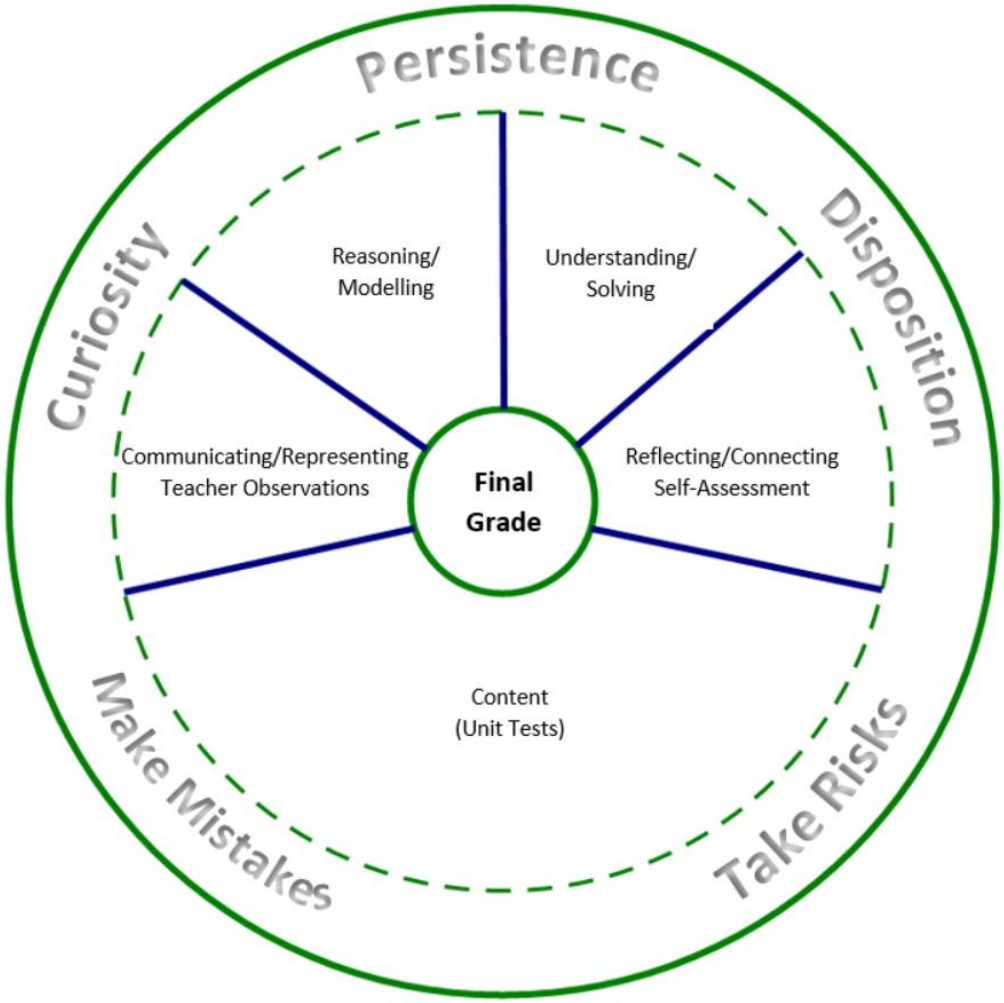
I expect that you are a responsible and reflective learner. I expect that you will attend classes, do your practice, and respond to the reflection questions posed after every class. The curricular competencies will be as important as the content of the course.

I expect that you come to class prepared, so that you can actively participate in problem solving activities during class time. I expect that you will work with your colleagues, share your ideas and ask questions. I expect that you will use the extra help during tutorial times as an additional resource if you need help with understanding the new concepts.

> **Being prepared for class includes** working through the *Check your Understanding* questions and doing more questions from each page if needed. Reflecting on your work and identifying questions you need to ask is also part of the preparation.

I expect that you will invest as much time in this course as you need to prepare for class, complete assigned work, and reflect on your learning. It is recommended that you study on average 0.5 – 1 hour for each period of class time. This is an average time, and you may find that you don't need that much or that you need more.

Assessment Categories	Focus
Unit Tests	Content
Communicating/Representing	Collaboration and communicating thinking
Understanding/Solving	Problem solving within content
Reflecting/Connecting **SA**	Reflecting and learning from mistakes
Reasoning/Modeling	Problem solving



Class Notebook I will be maintaining a class notebook using Microsoft's OneNote application. This digital space will be for you to demonstrate progress on your homework (*Check your understanding*), respond to reflection prompts and record personal growth through your self-assessments. This digital notebook will also be a valuable resource in the event that you miss a lesson; you will be able to access the daily lesson and photos of student work through the content library. You can access the OneNote digital notebook through MS Teams. During class time, you should have a small notebook to maintain your own meaningful notes from your experiences with the lesson.

Self-Checks and Exit Tickets are assessments that occur frequently and without warning. They are intended to give you an early indication of areas that you are having difficulty in.

Unit Tests are assessments that happen only four times over the course of the term (once for each unit). Reflection on progress and corrections need to be made after every unit test. If you are not satisfied with your score on a unit test, you will be eligible for a re-test. There are only two re-tests permitted in a semester. See Mr. Pruner for details on the test re-write process.

Self-assessments will be used for assessing student growth within the Reflecting/Connecting competency (**SA**). Over the course of four self-assessments, students will be graded on their ability to identify areas requiring improvement and then demonstrating some progress towards these goals.

Smart Phones and Devices: Across all NVSD secondary schools, access to and use of personal digital devices will not be permitted during instructional time. At the teacher's discretion, an exemption may be made when the use of such devices supports a specific curricular objective and is part of instructional planning.

Please keep these devices in your backpacks or lockers during class time.

Ministry Link:

https://curriculum.gov.bc.ca/curriculum/mathematics/12/foundations-of-mathematics