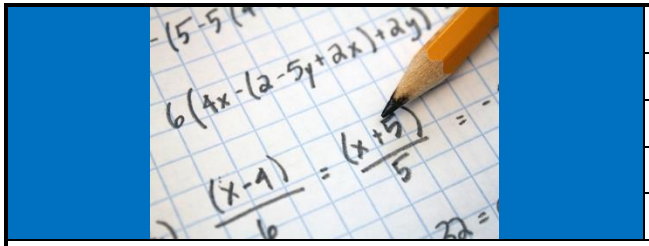

Course: Pre-calculus 11

Teacher: Ablett

Unit: Rational Expressions and Equations

Date: March 31 – April 23 (approximately)

Duration: 3 - 4 weeks

Description: Rational expressions are algebraic fractions. We will learn how to: simplify; perform the basic operations of addition, subtraction, multiplication and division; and solve equations. We will also consider restrictions for rational expressions.

	Big Ideas →	**Essential Questions**
Understand	*Which Big Ideas will be the focus of this unit?* • Algebra allows us to generalize relationships through abstract thinking. • The meanings of, and connections between, operations extend to powers, radicals, and polynomials.	*What questions will be guiding your students' inquiry?* • What are the similarities and differences between multiplication of numbers, polynomials, and rational expressions? • How do operations on rational numbers extend to operations with rational expressions? • How do the strategies for solving linear equations extend to solving rational equations? • What is the connection between domain and extraneous roots? • How do we tell if a mathematical solution is reasonable? • Where can errors occur when solving a contextualized problem?

	Core Competencies	**Curricular Competencies**
Do	*Choose one or more Core Competencies that will be focused on and developed in this unit:* **Critical and Reflective Thinking** • Analysing and critiquing • Questioning and investigating • Reflecting and assessing	*Which Curricular Competencies (specific to your course) will students learn and be assessed on in this unit?* **Reasoning and modelling** • Demonstrate fluent, flexible, and strategic thinking: **Understanding and solving** • Develop, demonstrate, and apply conceptual understanding of mathematical ideas through structured, guided, and open inquiry • Apply flexible and strategic approaches to solve problems • Solve problems with persistence and a positive disposition **Communicating and representing** • Explain and justify mathematical ideas and decisions • Use mathematical vocabulary and language to contribute to discussions • Take risks when offering ideas in classroom discourse **Connecting and reflecting** • Reflect Use mistakes as opportunities to advance learning

Know	Curricular Content	
	Which Curricular Content (specific to your course) will students learn and be assessed on this unit? • simplifying and applying operations to rational expressions • identifying non-permissible values • solving equations and identifying any extraneous roots	*Which activities, projects, exercises or discussions will teach this Curricular Content?* • Class explorations of how rational expressions are like fractions (how to simplify; how to add, subtract, multiply and divide) • Discuss how factoring allows us to simplify rational expressions • Consider worked examples and analyse steps • Discuss the meaning of undefined and how to determine non-permissible values • Extend operations with rational expressions to solving rational equations and relate to non-permissible values.

First Peoples Principles of Learning

How will they implement the First Peoples Principles of Learning?

Through class discussions, independent work and self-reflection, students will have the opportunity to reinforce the following First Peoples Principles of Learning

- Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits and the ancestors.
- Learning is holistic, reflexive, reflective, experimental, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
- Learning is embedded in memory, history, and story.
- Learning involves patience and time.

Unit Assessment

For Learning: Formative Assessment	*As Learning: Reflection/Self-Assessment*	*Of Learning: Summative Assessment*
• whiteboard work • online quizzes and activities • check of specific questions from homework • participation in video conferences	• self-assessments through Google Forms	• test

Required Resources

What resources (textbooks, computer programmes, website subscriptions) will students need to complete this unit?

- Pre-Calculus 11 textbook (McGraw-Hill Ryerson), chapter 6: Rational Expressions and Equations
- CEMC, University of Waterloo https://courseware.cemc.uwaterloo.ca/41?gid=134
- Computer for video-conferencing
- Notebook and calculator