

**Course:** Foundations of Mathematics and Pre-Calculus 10

**Teacher Names:** Sean Henry, Cody Miller, Graeme Barber and Sebastian Cabrera

**Contact information:** [shenry@sd44.ca](mailto:shenry@sd44.ca), [cmiller@sd44.ca](mailto:cmiller@sd44.ca), [gbarber@sd44.ca](mailto:gbarber@sd44.ca), [scabrera@sd44.ca](mailto:scabrera@sd44.ca)

### **Course Description:**

Mathematics 10 Foundations and Pre-Calculus is a course that prepares students to become numerate. This pathway is designed to provide students with the mathematical understandings and critical thinking skills identified for entry into post-secondary programs. A big idea in this course is that representing and analyzing situations allows us to notice and wonder about relationships. Through inquiry into the concepts of relationships and communication this course will assist students to develop the ability to conjecture, reason logically, employ quantitative and spatial information, and apply a variety of mathematical methods to solve problems and make decisions confidently and independently.

### **Summer Learning Beliefs:**

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty policy
- adhere to the *Summer Learning* Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and participate to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

*All Summer Learning policies can be accessed at:*

*<https://www.sd44.ca/school/summer/policies/Pages/default>.*

**Course Syllabus:**

Conceptual Understandings	Curricular Competencies	Content	Assessment performance task, project, essay, presentation, test, etc.
Trigonometry-practical applications: “Can you build a clinometer and use it and trig ratios to determine the height of objects in your environment?”	<ul style="list-style-type: none"> <li>• Explore, analyze, and apply mathematical ideas using reason, technology, and other tools</li> <li>• Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving</li> </ul>	<ul style="list-style-type: none"> <li>• primary trigonometric ratios to find unknown lengths and angles</li> </ul>	Short Quiz, <b>Clinometer Video Assignment</b>
The meanings of, and connections between, each operation extend to powers and polynomials - How are the different operations (+, -, x, ÷, exponents) connected? - What are the similarities and differences between multiplication of numbers, powers, and polynomials? How is prime factorization helpful? - How does prime factorization of numbers extend to algebraic terms?	<ul style="list-style-type: none"> <li>• Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number</li> <li>• Apply flexible and strategic approaches to solve problems</li> <li>• Solve problems with persistence and a positive disposition</li> <li>• Represent mathematical ideas in concrete, pictorial, and symbolic forms</li> </ul>	<ul style="list-style-type: none"> <li>• prime factorization</li> <li>• operations on powers with integral exponents</li> <li>• multiplication of polynomial expressions</li> <li>• polynomial factoring</li> </ul>	Short Quiz, Assignment TBA

<p>How can we verify that we have factored a trinomial correctly?          - How can visualization support algebraic thinking?          - How can patterns in numbers lead to algebraic generalizations?</p>	<ul style="list-style-type: none"> <li>• Connect mathematical concepts with each other, other areas, and personal interests</li> </ul>		
<p>Linear Relations and Functions: Represent, interpret, and analyze to understand linear relations</p>	<ul style="list-style-type: none"> <li>• Visualize to explore and illustrate mathematical concepts and relationships</li> <li>• Represent mathematical ideas in concrete, pictorial, and symbolic forms</li> </ul>	<ul style="list-style-type: none"> <li>• Functions and relations: connecting data, graphs, and situations</li> <li>• Arithmetic sequences</li> </ul>	<p>Short Quiz, <b>Linear Relations and Equations Graphing Assignment</b></p>
<p>Linear Equations and Graphs: apply algebra to generalized equations in order to understand relationships</p>	<ul style="list-style-type: none"> <li>• Apply flexible and strategic approaches to solve problems</li> <li>• Solve problems with persistence and a positive disposition</li> </ul>	<ul style="list-style-type: none"> <li>• Linear functions: slope and equations of lines</li> </ul>	
<p>Solving Systems of Linear Equations Graphically:           Create systems of linear equations and represent them graphically. Analyze graphs to interpret solutions in context.</p>	<ul style="list-style-type: none"> <li>• Model with mathematics in situational contexts</li> <li>• Connect mathematical concepts with each other, other areas, and personal interests</li> </ul>	<ul style="list-style-type: none"> <li>• Solving systems of linear equations graphically</li> <li>• solving problems in situational context</li> <li>• connecting ordered pair with meaning of an algebraic solution</li> </ul>	<p>Short Quiz, <b>Event Planning Assignment</b></p>

<p>Solving Systems of Linear Equations Algebraically:</p> <p>Create systems of linear equations and represent them algebraically. Apply multiple algebraic methods to solve and interpret systems.</p>	<ul style="list-style-type: none"> <li>• Think creatively by being open to trying different strategies</li> <li>• Model with mathematics in situational contexts</li> <li>• Apply flexible and strategic approaches to solve problems</li> </ul>	<ul style="list-style-type: none"> <li>• solving algebraically by inspection, substitution, and elimination</li> <li>• solving problems in situational contexts</li> </ul>	
<p>Finance-understanding why so many young Canadian Adults go into debt</p>	<ul style="list-style-type: none"> <li>• organizing and displaying data</li> <li>• to develop a sense of how mathematics helps us understand ourselves and the world around us</li> </ul>	<ul style="list-style-type: none"> <li>• Determining realistic starting salary, net pay, average monthly income</li> <li>• Creating a realistic electronic budget</li> <li>• Analysis explaining deficit, balance or surplus</li> </ul>	<p><b>Excel Finance Assignment “Why do so many Young Canadian Adults go into Debt”</b></p>

**Grade Boundaries:**

An “**A**” student is able to:

- Demonstrate and apply the curricular competencies at a sophisticated level
- Analyze information and synthesize correct solutions
- Discern challenging patterns
- Apply the concepts and extrapolate onto contextualized situations
- Superb command of numeracy (no computational error)
- Challenge problems in familiar and unfamiliar situation

A “**B**” student is able to:

- Demonstrates and often applies the curricular competencies
- Analyze information and synthesize the standard solutions
- Identify linear and basic patterns within contexts

- Apply basic concepts and able to understand some details in contextualized situations
- Good command of numeracy
- Challenge problems in familiar and working towards unfamiliar situations

A “C or C+” student is able to:

- Demonstrate the curricular competencies
- Organize the information and attempt to interpret the solution
- Identify the patterns within the context
- Build on the concepts and still working on finding the details in contextualized situations
- Solve routine two-step problems

A “C-” student is able to:

- Demonstrate the curricular competencies with limitations
- Represent the information in words or as a diagram with some success
- Recall on some elements within the patterns
- Solidify on the fundamental concepts
- Solve simple procedural problems

### **Resources:**

Resources
Microsoft Teams
Nelson Online Textbook Pathways 10 (free access)
Foundations of Mathematics and Pre-Calculus 10 Workbook
Students will need a scientific calculator