

Course: Pre-Calculus 11

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Course Description:

The Pre-Calculus 11 course is designed to provide students with the mathematical understanding and critical thinking skill identified for entry to university level mathematics, science, engineering, or other mathematically intensive fields of study. Topics include Solving Quadratic Equations, Analyzing Quadratic Function, Graphing Inequalities & Systems of Equations, Trigonometry, Rational Expressions & Equations, Absolute Value & Reciprocal Functions, and Exponential Functions and Financial Literacy.

Big Ideas:

Generalize – After solving a problem, can we extend it? Can we generalize it?

Connections – How are the different operations (+, -, x, ÷, exponents, roots) connected?

Relationships – How does the predictable pattern of linear functions extend to quadratic functions?

Proportional Reasoning and Indirect Measurement – Why do we use the comparison of relative size or scale instead of numerical difference? How do we use measurable values to calculate immeasurable values?

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>.

Learning Plan:

	Evidence of Learning (Assessment)	Learning Plan
80%	<p>Formative Assessments</p> <ul style="list-style-type: none"> • in-class explorations • quizzes • self-assessments • reflections <p>Summative Assessments</p> <ul style="list-style-type: none"> • inquiry assignments • tests 	<p><i>What the students will know:</i></p> <ul style="list-style-type: none"> • real numbers: classification • powers: rational exponents, exponent laws • radicals: <ul style="list-style-type: none"> - simplify radicals, irrational numbers - perform operations with radicals - solve equations algebraically and graphically • factoring trinomials of the form $ax^2 + bx + c$ or $a^2x^2 - b^2y^2$ • rational expressions: <ul style="list-style-type: none"> - simplify rational expressions, - solve equations • quadratics: <ul style="list-style-type: none"> - identify characteristics of graphs - solve equations (factoring, quadratic formula, completing the square) - graph quadratic functions • inequalities: solve single variable inequalities • trigonometry: <ul style="list-style-type: none"> - use of sine and cosine laws to solve non-right triangles - solve the unit circle, reference and conterminal angles, special angles • financial literacy : <ul style="list-style-type: none"> - compound interest - investments/loans, buy/lease <p><i>What students will do:</i></p> <p>Reasoning and modelling</p> <ul style="list-style-type: none"> • Model with mathematics in situational contexts.

		<ul style="list-style-type: none"> • Develop thinking strategies to solve puzzles and play games. • Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. <p>Understanding and solving</p> <ul style="list-style-type: none"> • Develop, demonstrate, and apply conceptual understanding. • Visualize to explore and illustrate mathematical concepts and relationships. • Apply flexible and strategic approaches to solve problems. <p>Communicating and representing</p> <ul style="list-style-type: none"> • 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. <p>Connecting and reflecting</p> <ul style="list-style-type: none"> • Reflect on mathematical thinking. • Connect mathematical concepts with each other, with other areas, and with personal interests. • Use mistakes as opportunities to advance learning. • Incorporate First Peoples worldviews, perspectives, knowledge, and practices to make connections with mathematical concepts.
		<p><i>What students will understand:</i></p> <ul style="list-style-type: none"> • Algebra allows us to generalize relationships through abstract thinking. • The meanings of, and connections between, operations extend to powers, radicals, and polynomials. • Quadratic relationships are prevalent in the world around us. • Trigonometry involves using proportional reasoning to solve indirect measurement problems.
20%	School Based Summative Assessment	Final exam
100%		

Grade Boundaries:

An “A” student will/can...

- Demonstrates and applies the curricular competencies.
- Analyze the information and synthesize the correct solution.
- 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 will /can ...

- Demonstrates and sometimes apply the curricular competencies.
- Analyze the information and synthesize the solution.
- Identify the complex patterns within the context.
- Apply the 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” student will /can ...

- 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.

Celebration of Learning:

The 2018 Celebration of Learning is shaped around “Ways of Knowing”.

Our class will collaborate to create one Pecha Kucha presentation. A Pecha Kucha presentation uses imagery and spoken words. Each student is responsible for preparing 3 slides of images and 30 seconds of spoken content about the ways in which we know.

The Pre-Calculus 11 class presentations will focus on the following ways of knowing and new curriculum Big Ideas:

1. Language – terms that are learned specifically for mathematics
2. Imagination – using the imagination to picture shapes/curves, graphs, patterns, etc.
3. Reason – using logic, inductive reasoning, and order of operations, etc. to understand mathematical functions



Resources:

Resources
<ul style="list-style-type: none">• Pre-Calculus 11 Workbook (purchased on the first day)
<ul style="list-style-type: none">• Students will need a graphing calculator (Texas Instrument 83 or 84 is preferred)