

Area of Learning: Mathematics		Grade 10 Foundations of Mathematics and Pre-calculus	
Big Ideas		Elaborations	
<ul style="list-style-type: none"> • Proportional comparisons can be made among right triangles, using trigonometry. 		<ul style="list-style-type: none"> • Proportional comparisons: <ul style="list-style-type: none"> ○ Geometry and Measurement: Proportional reasoning is used to make sense of multiplicative relationships. 	
<ul style="list-style-type: none"> • The meaning of each operation, including powers, extends to algebraic expressions. 		<ul style="list-style-type: none"> • operation: <ul style="list-style-type: none"> ○ Computational Fluency: Development of computational fluency requires a strong sense of number. 	
<ul style="list-style-type: none"> • Rate of change is an essential attribute of linear relations, and has meaning in the different representations, including equations. 		<ul style="list-style-type: none"> • linear relations: <ul style="list-style-type: none"> ○ Patterning: Patterns are used to identify regularities and form generalizations. 	
<ul style="list-style-type: none"> • Operations between polynomial expressions are connected and allow us to make meaning through abstract thinking. 		<ul style="list-style-type: none"> • connected: <ul style="list-style-type: none"> ○ Number: Algebraic reasoning is used to describe and analyze mathematical relationships. 	
<ul style="list-style-type: none"> • Analyzing simulations and data allows us to notice trends and relationships. 		<ul style="list-style-type: none"> • data: <ul style="list-style-type: none"> ○ Data and Probability: Stories can be told using mathematical evidence and reasoning. 	
Curricular Competencies	Elaborations	Content	Elaborations
<p><i>Students are expected to do the following:</i></p> <p>Reasoning, analyzing, and modelling</p> <ul style="list-style-type: none"> • 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 <p>Understanding and solving</p> <ul style="list-style-type: none"> • Develop, demonstrate, and apply 	<ul style="list-style-type: none"> • reasoning and logic: <ul style="list-style-type: none"> ○ inductive and deductive reasoning ○ predicting, generalizing, drawing conclusions through experiences including puzzles, games, and coding • Estimate: <ul style="list-style-type: none"> ○ being able to defend the reasonableness of an estimate across mathematical contexts • fluent and flexible thinking: <ul style="list-style-type: none"> ○ includes using known 	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> • operations on powers with integral exponents • prime factorization • functions and relations connecting data, graphs, and situations • linear relations, including slope and equations of lines • arithmetic sequences • systems of linear equations • multiplication of polynomial expressions • polynomial factoring 	<ul style="list-style-type: none"> • powers: <ul style="list-style-type: none"> ○ positive and negative exponents, exponent laws, evaluating, numerical and variable bases • prime factorization: <ul style="list-style-type: none"> ○ including greatest common factor (GCF) and least common multiple (LCM) • functions and relations: <ul style="list-style-type: none"> ○ communicating domain and range in contextualized situations ○ connecting graphs to context

<p>mathematical understanding through play, inquiry, and problem solving</p> <ul style="list-style-type: none"> • 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 <p>Communicating and representing</p> <ul style="list-style-type: none"> • 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 <p>Connecting and reflecting</p> <ul style="list-style-type: none"> • 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 	<p>facts and benchmarks; partitioning; applying whole number strategies to rational numbers and algebraic expressions</p> <ul style="list-style-type: none"> • Model: <ul style="list-style-type: none"> ○ using concrete materials and dynamic interactive technology ○ representing a situation graphically and/or symbolically • Visualize: <ul style="list-style-type: none"> ○ includes dynamic visualizations such as graphical relationships, simulations • flexible strategies: <ul style="list-style-type: none"> ○ from a repertoire of strategies, choosing an appropriate strategy to solve problems (e.g., guess and check, model, solve a simpler problem, use a chart, use diagrams, role-play) • experiences: <ul style="list-style-type: none"> ○ includes context, strategies and approaches, language across cultures • many ways: <ul style="list-style-type: none"> ○ including oral, written, visual, use of technology • discussions: <ul style="list-style-type: none"> ○ developing a 	<ul style="list-style-type: none"> • primary trigonometric ratios • financial literacy: gross and net pay, compound interest 	<ul style="list-style-type: none"> ○ meaning of a function ○ exploring simulations through experimental probability • linear relations: <ul style="list-style-type: none"> ○ one or more types of equations of lines, parallel and perpendicular, • arithmetic sequences <ul style="list-style-type: none"> ○ including making connections to linear relations ○ possible extension to series • systems: <ul style="list-style-type: none"> ○ solving graphically and algebraically • multiplication: <ul style="list-style-type: none"> ○ distributive property between two polynomials • factoring: <ul style="list-style-type: none"> ○ greatest common factor of a polynomial, , simpler cases involving trinomials ($y = ax^2 + bx + c, a = 1$) and difference of squares • financial literacy: <ul style="list-style-type: none"> ○ types of income; income tax and other deductions, compound interest and credit cards, introduction to loans and investments
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<p>make connections to mathematical concepts</p>	<p>mathematical community in the classroom through discourse — partner talks, small-group discussions, teacher-student conferences</p> <ul style="list-style-type: none"> • Represent: <ul style="list-style-type: none"> ○ concretely, pictorially, symbolically, including using models, tables, graphs, words, numbers, symbols • Reflect: <ul style="list-style-type: none"> ○ sharing the mathematical thinking of self and others, including evaluating strategies and solutions, extending, posing new problems and questions • other areas and personal interests: <ul style="list-style-type: none"> ○ to develop a sense of how mathematics helps us understand ourselves and the world around us (e.g., daily activities, local and traditional practices, the environment, popular media and news events, social justice, cross-curricular integration) • Incorporate: <ul style="list-style-type: none"> ○ Collaborate with local First Peoples Elders and knowledge keepers. 		
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