Foundations and Pre-Calculus Mathematics 10

Designed to help students achieve the Saskatchewan curricular outcomes for Foundations and Pre-Calculus of Mathematics 10 in an individualized learning system, this resource is divided into seven workbook units that come with corresponding score keys, tests, and test keys. No additional textbook is necessary. However, students will require a **TI-83** or **TI-84 calculator** in order to complete this course.

Upon completion of this workbook unit, the student should be able to:

Unit 1: Measurement

- ❖ Use proportional reasoning and conversion factors to convert measurements in the SI metric and Imperial measurement systems.
- ❖ Solve problems involving the surface areas of right pyramids and right cones.
- ❖ Solve problems involving the volumes of right pyramids and right cones.
- ❖ Solve problems involving the surface area and volume of a sphere.

Unit 2: Trigonometry

- ❖ Develop and apply the sine, cosine, and tangent ratios to determine angle measures.
- ❖ Use the sine, cosine, and tangent ratios to determine side lengths.
- ❖ Use sine, cosine, and tangent ratios to solve problems modelled by right triangles.

Unit 3: Factors and Products

- ❖ Determine prime factors, greatest common factors, and least common multiples of whole numbers.
- ❖ Apply algebraic strategies to multiply binomials and to factor trinomials.
- ❖ Apply algebraic strategies to multiply polynomials.
- ❖ Factor special polynomials (trinomial squares and difference of squares).

Unit 4: Radicals and Exponents

- ❖ Express radical expressions in varying forms and as decimal expressions.
- ❖ Identify and order irrational numbers.
- ❖ Express entire radicals as mixed radicals, and vice versa.
- ❖ Express fractional exponents as radicals, and vice versa.
- ❖ Relate negative exponents to reciprocals.
- ❖ Apply the exponent laws to simplify expressions.

Unit 5: Relations and Functions

- ❖ Define relation, ordered pair, abscissa, and ordinate.
- ❖ Graph ordered pairs in the Cartesian coordinate plane, and graph real-world relations in the Cartesian coordinate plane.
- ❖ Read information from a graph, interpolate information between two given ordered pairs, and extrapolate information by extending the line of the graph.
- ❖ Identify, graph, and interpret examples of linear functions describing real-world situations and distinguish between linear and non-linear functions.
- ❖ Determine if a relation is a function by employing the vertical line test.
- ❖ Graph a linear function using a table of values.
- ❖ Solve equations in two variables, given the domain of one of the variables.
- ❖ Determine if an ordered pair is a solution to the linear equation.
- ❖ Observe that the solution set for an equation consists of all the ordered pairs that lie on the graph of the equation and that parentheses have to be used when substituting in for variables.
- ❖ Construct scatter plots from real-world data using the graphic calculator.

❖ Interpret and critically analyze these scatter plots.

Unit 6: Equations of Linear Functions

❖ Calculate the slope of a line graphically; algebraically; from the equation.
❖ Determine the slope of horizontal and vertical lines.
❖ Identify lines that have positive, negative, zero, and undefined slopes.
❖ Determine the slope of parallel and perpendicular lines.
❖ Graph a linear equation in two variables using x and y intercepts, the slope and an ordered pair, and the slope and - - intercept.
❖ Write linear equations in slope-intercept form and in standard form.
❖ Write the equation of a line when given the slope and y – intercept, the slope and one point on the line, the graph of the line, and two points on the line.

Unit 7: Systems of Linear Equations

❖ Develop systems of linear equations.
❖ Solve a system of linear equations graphically.
❖ Solve a system of linear equations, using a graphic calculator.
❖ Solve a system of linear equations by substitution.
❖ Solve a system of linear equations by elimination.