CROCUS PLAINS REGIONAL SECONDARY SCHOOL
COURSE OUTLINE AND ASSESSMENT GUIDE

Introduction to Applied & Pre-Calculus 20S (MPA20S)

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Course Description/Objectives:

Grade 10 Introduction to Applied and Pre-calculus Mathematics (20S) is intended for students considering post-secondary studies that require a math pre-requisite. This pathway provides students with the mathematical understanding and critical-thinking skills that have been identified for specific post-secondary programs of study. The topics studied form the foundation for the content to be studied in both Grade 11 Applied Mathematics and Grade 11 Pre-calculus Mathematics.

Text/ Other Resources: Foundations and Pre-Calculus Mathematics 10

Student Learning Skills

The mathematical processes listed below are critical aspects of learning, doing, and understanding mathematics. They are common through the four levels of Mathematics and extend to real world realities.

1. Use communication in order to learn & express understanding
2. Make connections among mathematical ideas, other concepts in mathematics & everyday experiences & disciplines
3. Demonstrate fluency with mental mathematics and estimation
4. Develop and apply new mathematical knowledge through problem-solving
5. Develop mathematical reasoning
6. Select & use technology as a tool for learning and solving problems
7. Develop visualization skills to assist in processing information, making connections & solving problems
8. Take personal responsibility for the mastery of concepts and skills

General Learning Outcomes

1. Develop spatial sense and proportional reasoning.
2. Develop algebraic reasoning and number sense.
3. Develop algebraic and graphical reasoning through the study of relations.

Units of Study:

Unit Title	Learning Outcomes	Assessment Plan	Proposed Time
Factors and Products	• Demonstrate an understanding of factors of whole numbers by determining: 1. prime factors 2. greatest common factor 3. least common multiple 4. square root 5. cube root • Demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials), concretely, pictorially, and symbolically. • Demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically.	Formative Assessment Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations Summative Assessment May include: - Unit Tests/Quizzes/ Projects	~ 12 Classes
Roots and Powers	• Demonstrate an understanding of powers with integral and rational exponents. • Demonstrate an understanding of irrational numbers by representing, identifying, and simplifying irrational numbers ordering irrational numbers.	Formative Assessment Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations Summative Assessment May include: - Unit Tests/Quizzes/ Projects	~ 11 Classes

Measurement	• Solve problems that involve linear measurement, using 1. SI and Imperial units of measure 2. Estimation strategies 3. Measurement strategies • Apply proportional reasoning to problems that involve conversions within and between SI and Imperial units of measure • Solve problems, using SI and Imperial units, that involve the surface area and volume of 3-d objects, including 1. right cones 2. right cylinders 3. right prisms 4. right pyramids 5. spheres	<u>Formative Assessment</u> Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations <u>Summative Assessment</u> May include: - Unit Tests/Quizzes/ Projects	~ 10 Classes
Trigonometry	• Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.	<u>Formative Assessment</u> Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations <u>Summative Assessment</u> May include: - Unit Tests/Quizzes/ Projects	~ 11 Classes

Relations and Functions	• Interpret and explain the relationships among data, graphs and contexts. • Demonstrate an understanding of relations and functions. • Describe and represent linear relations, using 1. Words 2. ordered pairs 3. tables of values 4. graphs 5. equations • Represent a linear function, using function notation.	<u>Formative Assessment</u> Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations <u>Summative Assessment</u> May include: - Unit Tests/Quizzes/ Projects	~ 11 Classes
Linear Functions	Demonstrate an understanding of slope with respect to 1. rise and run 2. line segments and lines 3. rate of change 4. parallel lines 5. perpendicular lines • Determine the characteristics of the graphs of linear relations, including the 1. Intercepts 2. Slope 3. Domain 4. Range • Relate linear relations expressed in 1. slope–intercept form ($y = mx + b$) 2. general form ($Ax + By + C = 0$) 3. slope–point form ($y – y_1 = m (x – x_1)$) to their graphs • Determine the equation of a linear relation, given 1. a graph 2. a point and the slope 3. two points 4. a point and the equation of a parallel or perpendicular line 5. a scatter plot	<u>Formative Assessment</u> Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations <u>Summative Assessment</u> May include: - Unit Tests/Quizzes/ Projects	~ 12 Classes

Systems of Linear Equations	• solve problems that involve systems of linear equations in two variables, graphically and algebraically.	Formative Assessment Assessment may include: - Textbook Assignments - Mental Math - Quizzes - Math Journals - Conferencing - Group Discussions - Observations Summative Assessment May include: - Unit Tests/Quizzes/ Projects	~ 8 Classes

(please note that order of units completed will vary and/or be combined). All units will be evaluated with a variety of assignments, checkpoints, tests and/or projects.

Course Evaluation Structure

Several types of evaluation will be used in the course. This will allow students to display their level of learning in a variety of manners and also expand their skill levels in different presentation methods.

Assessment Guidelines

There are various purposes for assessment:

- Assessment *for* learning **(formative assessment)**: where assessment helps teachers gain insight into what students understand in order to plan and guide instruction, and provide helpful feedback to students.
- Assessment *of* learning **(summative assessment)**: where assessment informs students, teachers and parents, as well as the broader educational community, of achievement at a certain point in time in order to celebrate success, plan interventions and support continued progress.

Academic Achievement

Grades will be calculated on summative assessment information only.
The final calculation will be a fair reflection of a student's achievement of the learning outcomes.

- Tests & Major Projects 55%
- Assignments/Checkpoints 25%
- Final Exam 20%

Learning Behaviours

Assessment and reporting of learning behaviors will be according to the Brandon School Division Learning Behaviors Rubric.

Unit/Term Summative Assessment – Due Dates

All assessments will be assigned a reasonable completion date. If absent, students are responsible for getting notes, completing assignments, or making arrangements for tests to be written during their own time. In the event of a school or parent excused absence, students will be given a reasonable amount of time to catch up on any assessments.

Classroom policies and rules:

- Be respectful and responsible at all times.
- Students are expected to attend class each day. They will come prepared to work each class period, and will be required to take notes, perform daily assignments, quizzes, and tests.
- **Rules around Cell Phones**

1) On August 15, 2024, the Government of Manitoba has banned the use of cellular phones in the classroom for grades 9 -12, phones are permitted to be used on breaks and lunch. Phones may be used within a classroom with the permission of the classroom teacher for educational purposes only, supporting students with medical or diverse learning needs.

2) Phones are not permitted for use in Mr. Patel's class as sufficient devices are available to support student learning

- It is the student's responsibility to notify the teacher of future absences and to schedule time to make up tests/assignments.
- Students are not allowed to use calculator on their phones during a test or final **exam.**

Extra Help/Contact Information

I am available for extra help before school, at lunch and after school.I can be found in **Room#227**