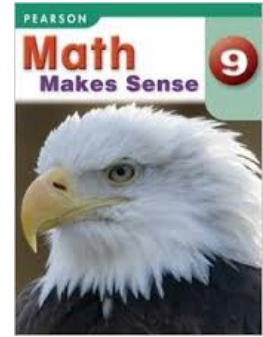




COURSE OUTLINE September 2019 to June 2020 **MATH NINE**



Teacher: Mr. D. Moon
Telephone: 786-2624
E-mail: donald.moon@ngps.ca

COURSE DESCRIPTION

The main goals of mathematics education are to prepare students to:

- (a) use mathematics confidently to solve problems
- (b) communicate and reason mathematically
- (c) appreciate and value mathematics
- (d) make connections between mathematics and its applications
- (e) commit themselves to lifelong learning
- (f) become mathematically literate adults, using mathematics to contribute to society

Students who have met these goals will:

- (a) gain understanding and appreciation of the contributions of mathematics as a science, philosophy and art
- (b) exhibit a positive attitude toward mathematics
- (c) engage and persevere in mathematical tasks and projects
- (d) contribute to mathematical discussions
- (e) take risks in performing mathematical tasks
- (f) exhibit curiosity

COURSE CURRICULUM OUTCOMES

Number

General Outcome: Develop number sense.

Specific Outcome 1

Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by:

- representing repeated multiplication, using powers
- using patterns to show that a power with an exponent of zero is equal to one
- solving problems involving powers.

Specific Outcome 2

Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents:

- $(a^m)(a^n) = a^{m+n}$
- $a^m \div a^n = a^{m-n}$, $m > n$
- $(a^m)^n = a^{mn}$
- $(ab)^m = a^m b^m$
- $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$, $b \neq 0$.

Specific Outcome 3

Demonstrate an understanding of rational numbers by:

- comparing and ordering rational numbers
- solving problems that involve arithmetic operations on rational numbers.

Specific Outcome 4

Explain and apply the order of operations, including exponents, with and without technology.

Specific Outcome 5

Determine the square root of positive rational numbers that are perfect squares.

Specific Outcome 6

Determine an approximate square root of positive rational numbers that are non-perfect squares.

Patterns & Relations - Patterns

General Outcome: Use patterns to describe the world and to solve problems.

Specific Outcome 1

Generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution.

Specific Outcome 2

Graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.

Patterns & Relations - Variables & Equations

General Outcome: Represent algebraic expressions in multiple ways.

Specific Outcome 3

Model and solve problems, using linear equations of the form:

- $ax = b$
- $\frac{x}{a} = b, a \neq 0$
- $ax + b = c$
- $\frac{x}{a} + b = c, a \neq 0$
- $ax = b + cx$
- $a(x + b) = c$
- $ax + b = cx + d$
- $a(bx + c) = d(ex + f)$
- $\frac{a}{x} = b, x \neq 0$

where a, b, c, d, e and f are rational numbers

Specific Outcome 4

Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context

Specific Outcome 5

Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2)

Specific Outcome 6

Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2)

Specific Outcome 7

Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.

Shape & Space - Measurement

General Outcome: Use direct and indirect measurement to solve problems.

Specific Outcome 1

Solve problems and justify the solution strategy, using the following circle properties:

- the perpendicular from the center of a circle to a chord bisects the chord
- the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc
- the inscribed angles subtended by the same arc are congruent

Shape & Space - 3-D Objects & 2-D Shapes

General Outcome: Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

Specific Outcome 2

Determine the surface area of composite 3-D objects to solve problems

Specific Outcome 3

Demonstrate an understanding of similarity of polygons.

Shape & Space - Transformations

General Outcome: Describe and analyze position and motion of objects and shapes.

Specific Outcome 4

Draw and interpret scale diagrams of 2-D shapes.

Specific Outcome 5

Demonstrate an understanding of line and rotation symmetry.

Statistics & Probability - Data Analysis

General Outcome: Collect, display and analyze data to solve problems.

Specific Outcome 1

Describe the effect of:

- bias
- use of language

- ethics
- cost
- time and timing
- privacy
- cultural sensitivity

on the collection of data.

Specific Outcome 2

Select and defend the choice of using either a population or a sample of a population to answer a question.

Specific Outcome 3

Develop and implement a project plan for the collection, display and analysis of data by:

- formulating a question for investigation
- choosing a data collection method that includes social considerations
- selecting a population or a sample
- collecting the data
- displaying the collected data in an appropriate manner
- drawing conclusions to answer the question.

Statistics & Probability - Chance & Uncertainty

General Outcome: Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

Specific Outcome 4

Demonstrate an understanding of the role of probability in society.

Required Materials:

Students are expected to bring these materials with them to every class:

3 ring binder – divided into two sections (one section for notes, one section for assignments)

Loose leaf paper – lined and graph

Blue pens

Red (or another accent colour) pens

Pencils – all math homework and tests must be completed in pencil

Eraser and Ruler

Geometry set and a CALCULATOR

Program Organization and Anticipated Time

Unit #1: Square Roots and Surface Area (**September-October**)

Unit #2: Powers and Exponent Laws (**October-November**)

Unit #3: Rational Numbers (**November-December**)

Unit #4: Linear Relations (**December- January**)

Unit #5: Polynomials (**January-February**)

Unit #6: Linear Equations and Inequalities (**February-March**)

Unit #7: Similarity and Transformations (**March-April**)

Unit #8: Circle Geometry (**April-May**)

Unit #9: Probability and Statistics (**May-June**)

JUNE: Final Exam date TBD

Expectations

Students must ensure that they behave in a manner that permits a positive learning experience for the individual and the class as a whole. This involves cooperation, dedication, and self-discipline on the part of the student. In addition, regular and prompt attendance is required if the course is to be successfully completed. Any inappropriate behavior will be dealt with immediately. Further incidents may result in sterner action involving parents and/or the principal.

1. **ARRIVE ON TIME AND PREPARED.** Time lost by late arrival or unprepared arrival may be made up for at noon.
2. **RESPECT** is an essential part of working in a learning community:
 - a. All students are expected to respect themselves, each other and the teacher, as well as all property and equipment. Name-calling, teasing, inappropriate language, damage to property, etc. will not be tolerated.
 - b. **Use class time effectively** and complete your work on time. Misuse of class time will result in less class time to work on assignments, etc. Misuse of time may also result in making up for that time at lunch hour.

- c. Do not talk when someone else is talking, whether it is the teacher or a classmate. You want to be heard when you are speaking and it is expected you would demonstrate the same respect.
3. This is **YOUR** learning environment! A neat and tidy classroom makes the learning experience more enjoyable and safe for everyone. You are responsible for maintaining your personal space and the classroom in general. Please clean up after yourself.
4. Inform the teacher if you know you are going to be absent so you can complete missed work on your own time. If you are absent unexpectedly, it is your responsibility to find out what you missed from the teacher or a classmate and get caught up.
5. **If you are struggling or unsure of a concept, please speak with me immediately. The longer you wait, the further behind you will find yourself!**

Rewrite Policy

You will be allowed to rewrite unit tests only. A rewrite will not be offered for assignments, quizzes or final exams, except in the event of extenuating circumstances. In order to rewrite a unit test, the following **criteria must be met**:

- request the rewrite within one day of the return of your original test
- complete all corrections from the original test on a separate sheet of paper, including explanations of errors and hand in within one week of the return of the original test

After corrections are turned in, the date for the rewrite will be decided. There will be one rewrite allowed, meaning that all students requesting a rewrite will be required to write it at the same time. Rewrites will be done on the students' time; that is, at noon or after school, not during class time

Homework

Efforts will always be made to provide ample class time to complete course work but occasionally more time may be required and homework becomes a necessity.

Extra Help Policy

It is the student's responsibility to request extra help outside the classroom. Advance notice is required.

It is expected that students attempt work on their own before asking for extra help. Assignments and tests are not the time to ask for help, as then the assessment is not a true picture of what the

student knows. Several opportunities for Learning Activities will take place – these are the activities that students should request help with or clarification if required.

We all need to do our part to ensure a successful year, the teacher has final responsibility for what goes on in our classroom and therefore, it is expected that students follow instructions and requests in order to maintain a safe and positive learning environment.

Assessment Strategies:

The learning strategies which will be used to help students reach their potential include:

➤ Differentiated Instruction (D.I.) and Assessment for Learning (A4L).

D.I. involves being more aware of the differences in how students learn which in turn leads to varied methods of instruction to better meet student needs. D.I. will also involve giving students a greater say in some of the areas they choose to focus their studies on and how they present their findings. A4L (*Learning Activities*) requires students to be more aware of the objectives and requirements of each assignment. It focuses on using assignments as a method of improvement rather than as a source of marks. In this light some of the students' work will be commented on or discussed, without putting an actual mark on it. In this way students will learn what is expected of them and how to improve their work. It is vital that students put their best effort into completing and learning from all assignments.

➤ Assessment of Learning

Assignments -on a regular basis individual assignments will be taken in and carefully marked as a check of student understanding and progress. These will include Applying Concept and Critical Thinking questions, book/ lab reports, mapping projects, etc. and are used for marks.

-all assignments and projects must be completed. Late work will be completed at noon as zeros are not acceptable.

Quizzes- to ensure that students keep up with their studies on a daily basis there will be short quizzes in which students will be asked to recall work from the previous day, explain an important concept or term, etc.

Tests- at the end of each unit a test will be written covering the work just completed. However, due to the fact that most courses build on previous knowledge, understanding the ideas from earlier chapters will be necessary. Tests will consist of a variety of multiple choice questions, vocabulary words, and written response questions, depending on the course. All tests must be written. If you have a valid reason for missing a test, make arrangements to write a make-up as soon as you return.

Final Exam- these will deal with all the material covered to date. The format will be similar to the chapter tests but on a larger scale.

The Final Grade:

The evaluation for each course is based on the student's achievement of curriculum expectations and the demonstrated skills required for effective learning. The percentage grade represents the quality of the student's overall achievement of the expectations for the course and reflects the corresponding level of achievement.

Evaluation:

A4L no marks value (comments only)

Assignments 45%

Unit Tests & Quizzes 35%

Final Exam- 20%

** The teacher retains the right to change the evaluation scheme to meet the needs of the program or students.*

Any parent wishing to meet with me to discuss a problem or concern may arrange a meeting by calling the school. Any student wishing to request extra help or wishing to discuss a problem or concern can speak with me at school. I will do my best to make myself available for extra help.