



Box 200

Namao, AB T0A 2N0

780-973-9191

# COURSE OUTLINE

## Mathematics 9

### SEPTEMBER 2014 – JUNE 2015

#### Ms. Shute

[jshute@sturgeon.ab.ca](mailto:jshute@sturgeon.ab.ca)

**Student Signature:**

**Parent Signature:**

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##### Science 9 – 2014/2015

###### OBJECTIVES

To develop in students a mathematic literacy through:

* 1. Communication: learn and express understanding
  2. Connections: connect mathematical ideas to other concepts in mathematics, to everyday experiences and to other disciplines
  3. Mental Math & Estimation: demonstrate fluency with mental mathematics and estimation
  4. Problem Solving: develop and apply new mathematical knowledge through problem solving
  5. Reasoning: develop mathematical reasoning
  6. Technology: select and use technologies as tools for learning and for solving problems
     1. Visualization**:** develop visualization skills to assist in processing information, making connections and solving problems.

###### COURSE OUTLINE

**Unit A: NUMBER**

* Students will develop number sense
  + They must demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents
  + They must demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents
  + They must demonstrate an understanding of rational numbers
  + They must explain and apply the order of operations, including exponents, with and without technology
  + They must explain and apply the order of operations, including exponents, with and without technology
  + They must determine an approximate square root of positive rational numbers that are non-perfect squares.

**Unit B: Patterns & Relations - Patterns**

* Students will use patterns to describe the world and to solve problems.
  + They must generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution
  + They must graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems

**Unit C: Patterns & Relations - Variables & Equations**

* Students will represent algebraic expressions in multiple ways.
  + They must model and solve problems, using linear equations
  + They must explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.
  + They must demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2)
  + They must 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)
  + They must 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

**Unit D: Shape & Space - Measurement**

* Students will solve problems and justify the solution strategy, using the following circle properties:
  + the perpendicular from the centre 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
  + a tangent to a circle is perpendicular to the radius at the point of tangency.

**Unit E: Shape & Space - 3-D Objects & 2-D Shapes**

* Students will describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.
  + They must determine the surface area of composite 3-D objects to solve problems
  + They will demonstrate an understanding of similarity of polygons

**Unit F: Shape & Space – Transformations**

* Students will describe and analyze position and motion of objects and shapes.
  + They must draw and interpret scale diagrams of 2-D shapes
  + They must demonstrate an understanding of line and rotation symmetry

**Unit G: Statistics & Probability - Data Analysis**

* Students will collect, display and analyze data to solve problems.
  + They must describe the effect of:
    - bias
    - use of language
    - ethics
    - cost
    - time and timing
    - privacy
    - cultural sensitivity
    - on the collection of data
  + They must Select and defend the choice of using either a population or a sample of a population to answer a question
  + They must 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.

**Unit H: Statistics & Probability - Chance & Uncertainty**

* Students will use experimental or theoretical probabilities to represent and solve problems involving uncertainty
  + They must demonstrate an understanding of the role of probability in society

###### COURSE SET UP

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Assignments 15%

Quizzes 30%

Exams 35%

Final Exam 20%

1. **REQUIRED MATERIALS**

* Textbook
* Binder with Paper
* Pencil(s)
* Ruler
* Eraser
* Graph paper
* Scientific calculator

###### EXPECTATIONS

* Students need to attend every class and complete assigned work every evening.
* Students, who do not complete assigned work, will be expected to attend a lunch hour detention to complete the work.
* Students need to inform the office if they are away during an exam or quiz.

1. **ASSESSMENT RE – WRITE POLICY**

* **Students will not be permitted to re –write tests, (unit exams).**
* **Students will only be able permitted to re – write assignments and quizzes at the discretion of the teacher.**

1. **NHI – NOT HANDED IN POLICY**

* If an assignment is not completed to the instructor’s satisfaction it will be awarded an NHI, (Not Handed In). A student will be given opportunities to turn this assignment in at a later date as long as the conditions outlined in the assessment re – write policy, (section F) are met. The student will be allowed these opportunities until completion of the unit the assignment is included in. Upon the completion of the unit, (a unit test has been taken), the mark will remain an NHI, (weighted as a zero), for the remainder of the school year.

\*\*\* Exceptions to the expectations, re – write policy and NHI policy may occur, are rare, and are at the discretion of the teacher. \*\*\*