

Grade Nine Mathematics Course Outline

Based on Western Canadian Protocol for Collaboration in Basic Education

There are four main strands in this Protocol:

1. **Numbers:** number concepts, number operations
2. **Patterns and Relations:** patterns, variables and equations, relations and functions
3. **Shape and Space:** measurement, 3-D objects and 2-D shapes, transformations
4. **Statistics and Probability:** data analysis, chance and uncertainty

The Math Processes that are stressed are the following: Communication, Connections, Estimation and Mental Math, Problem Solving, Reasoning, Technology, and Visualization

General Outcomes of the Four Strands and Sub strands

1. Numbers

Number Concepts: Students will explain and illustrate the structure and the interrelationship of the two sets of numbers within the rational number system. They will also develop a number sense of powers with integral exponents with rational bases.

Number Operations: Students will use a scientific calculator or computer to solve problems involving rational numbers. They will also explain how exponents can be used to bring meaning to large and small numbers and use calculators or computers to perform calculations involving these numbers.

2. Patterns and Relations

Patterns: Students will generalize, design and justify math procedures, using appropriate patterns, models and technology.

Variables and Equations: Students will solve and verify linear equations and inequalities in one variable. Students will generalize math operations from the set of rational numbers to the set of polynomials.

3. Shape and Space

Measurement: Students will use trigonometric ratios to solve problems involving a right triangle. Students will describe the effects of dimension changes in related 2 D shapes and 3 D shapes objects solving problems involving area, perimeter, surface area and volume.

3-D Objects and 2-D Shapes: Students will specify conditions under which triangles may be similar or congruent and use these conditions to solve problems. Students will use spatial problem solving in building, describing and analyzing geometric shapes.

Transformations: Students will apply coordinate geometry and pattern recognition to predict the effects of translation, rotations, reflections and dilatations on 1 D lines and 2 D lines.

4. Statistics and Probability

Data Analysis: Students will collect and analyze experimental results in two variables, using technology as required.

Chance and Uncertainty: Students will explain the use of probability and statistics in the solution of complex problems.

Time Line

Course and text introduction, problem solving	September
Ch. 1 Data Analysis	September
Ch. 2 Algebra and Equations	October
Ch. 3 Congruence and Similarity	November
Ch. 4 Right Triangle Calculations	December
Ch. 5 Powers and Roots	January
Ch. 6 Polynomials	February + March
Ch. 7 Transformations	April
Ch. 8 Geometry	May
Course Review and Final Exam	June

Equipment Needed for Course

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|-----------------------------|---------------------------------------|------------------|
| 1. Red pens | 4. Scientific calculator | 7. Geometry kit |
| 2. HB Pencils (at least 10) | 5. 30 cm ruler | 8. 3 inch binder |
| 3. Eraser | 6. At least 100 sheets of lined paper | |

Evaluation

Grades will be based on daily work, quizzes, exams, surprise exams, binder checks, attitude, effort and participation.

Term Exam	25%
Daily Work	20%
Unit Exams	30%
Quizzes	15%
Binder Check	5%
Effort, attitude, participation	5%
	100%

Final Report Card Mark

Term 1	23.3 %
Term 2	23.3 %
Term 3	23.4 %
Departmental exam	30.0 %
	100%

Math Class Expectations

If you are absent for any reason, it is very important you see me or a classmate to find out what you missed. You should borrow the notes from myself or a classmate and copy them. This is critical as I will be marking your binder on neatness, completeness, and all notes present. Your text book is loaned to you for the year. It must be returned in June in the same condition you received it in during September. If it is damaged, missing, or vandalized, you are responsible for any costs to repair or replace the book.

Resources

1. Minds on Math 9
2. Journeys in Math 9
3. Canadian Math 9
4. Math Warm Ups
5. Minds on Math 9 software
6. TLE 9
7. Mathpower 9
8. Mathpower 10