Mathematics 11

Outcomes

NOVA SCOTIA
NOUVELLE-ÉCOSSE

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Mathematics Grade 11

Prepared by the Department of Education and Early Childhood Development

This is the most recent version of the current curriculum materials as used by teachers in Nova Scotia.

Mathematics Grade 11 Outcomes

G02 Students will be expected to solve problems that involve the properties of angles and triangles.

Performance Indicators:

- G02.01 Determine the measures of angles in a diagram that involve parallel lines, angles, and triangles and justify the reasoning.
- G02.02 Identify and correct errors in a given solution to a problem that involves the measures of angles.
- G02.03 Solve a contextual problem that involves angles or triangles.
- G02.04 Construct parallel lines, using only a compass and straight edge or a protractor and straight edge, and explain the strategy used.
- G02.05 Determine if lines are parallel, given the measure of an angle at each intersection formed by the lines and a transversal.

G03 Students will be expected to solve problems that involve the cosine law and the sine law.

Performance Indicators:

- G03.01 Draw a diagram to represent a problem that involves the cosine law and/or sine law.
- G03.02 Explain the steps in a given proof of the sine law and of the cosine law.
- G03.03 Solve a problem involving the cosine law that requires the manipulation of a formula.
- G03.05 Solve a problem involving the sine law that requires the manipulation of a formula.
- G03.06 Solve a contextual problem that involves the cosine law and/or the sine law.

LR01 Students will be expected to analyze and prove conjectures, using inductive and deductive reasoning, to solve problems.

Performance Indicators:

- LR01.01 Make conjectures by observing patterns and identifying properties, and justify the reasoning.
- LR01.02 Explain why inductive reasoning may lead to a false conjecture.
- LR01.03 Compare, using examples, inductive and deductive reasoning.
- LR01.04 Provide and explain a counterexample to disprove a given conjecture.
- LR01.05 Prove algebraic and number relationships, such as divisibility rules, number properties, mental mathematics strategies, or algebraic number tricks.
- LR01.06 Prove a conjecture using deductive reasoning (not limited to two-column proofs).
- LR01.07 Determine if an argument is valid and justify the reasoning.
- LR01.08 Identify errors in a given proof.
- LR01.09 Solve a contextual problem involving inductive or deductive reasoning.

S01 Students will be expected to demonstrate an understanding of normal distribution, including standard deviation and z-scores.

Performance Indicators:

S01.01 Explain, using examples, the meaning of standard deviation.
S01.02 Calculate, using technology, the population standard deviation of a data set.
S01.03 Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry, and area under the curve.
S01.04 Determine if a data set approximates a normal distribution and explain the reasoning.
S01.05 Compare the properties of two or more normally distributed data sets.
S01.06 Explain, using examples that represent multiple perspectives, the application of standard deviation for making decisions in situations such as warranties, insurance, or opinion polls.
S01.07 Solve a contextual problem that involves the interpretation of standard deviation.
S01.08 Determine, with or without technology, and explain the *z*-score for a given value in a normally distributed data set.
S01.09 Solve a contextual problem that involves normal distribution.

S02 Students will be expected to interpret statistical data, using confidence intervals, confidence levels, and margin of error.

Performance Indicators:

S02.01 Explain, using examples, how confidence levels, margin of error, and confidence intervals may vary depending on the size of the random sample.
S02.02 Explain, using examples, the significance of a confidence interval, margin of error, or confidence level.
S02.03 Make inferences about a population from sample data, using given confidence intervals, and explain the reasoning.
S02.04 Provide examples from print or electronic media in which confidence intervals and confidence levels are used to support a particular position.
S02.05 Interpret and explain confidence intervals and margin of error, using examples found in print or electronic media.
S02.06 Support a position by analyzing statistical data presented in the media.

S03 Students will be expected to critically analyze society's use of inferential statistics.

Performance Indicators:

S03.01 Investigate examples of the use of inferential statistics in society.
S03.02 Assess the accuracy, reliability, and relevance of statistical claims by
- identifying examples of bias and points of view
- identifying and describing the data collection methods
- determining if the data is relevant

S03.03 Identify, discuss, and present multiple sides of the issues with supporting data.

RF01 Students will be expected to model and solve problems that involve systems of linear inequalities in two variables.

Performance Indicators:

RF01.01 Model a problem using a system of linear inequalities in two variables.
RF01.02 Graph the boundary line between two half planes for each inequality in a system of linear inequalities, and justify the choice of solid or broken lines.
RF01.03 Determine and explain the solution region that satisfies a linear inequality, using a test point when given a boundary line.
RF01.04 Determine, graphically, the solution region for a system of linear inequalities, and verify the solution.
RF01.05 Explain, using examples, the significance of the shaded region in the graphical solution of a system of linear inequalities.
RF01.06 Solve an optimization problem using linear programming.

RF02 Students will be expected to demonstrate an understanding of the characteristics of quadratic functions, including vertex, intercepts, domain and range, and axis of symmetry.

Performance Indicators:

RF02.01 Determine, with or without technology, the intercepts of the graph of a quadratic function.
RF02.02 Determine, by factoring, the roots of a quadratic equation, and verify by substitution.
RF02.03 Determine, using the quadratic formula, the roots of a quadratic equation.
RF02.04 Explain the relationships among the roots of an equation, the zeros of the corresponding function, and the *x*-intercepts of the graph of the function.
RF02.05 Explain, using examples, why the graph of a quadratic function may have zero, one, or two *x*-intercepts.
RF02.06 Express a quadratic equation in factored form, using the zeros of a corresponding function or the *x*-intercepts of its graph.
RF02.07 Determine, with or without technology, the coordinates of the vertex of the graph of a quadratic function.
RF02.08 Determine the equation of the axis of symmetry of the graph of a quadratic function, given *x*-intercepts of the graph.
RF02.09 Determine the coordinates of the vertex of the graph of a quadratic function, given the equation of the function and the axis of symmetry, and determine if the *y*-coordinate of the vertex is a maximum or a minimum.
RF02.10 Determine the domain and range of a quadratic function.
RF02.11 Sketch the graph of a quadratic function.
RF02.12 Solve a contextual problem that involves the characteristics of a quadratic function.