

Grade 11 Mathematics 20-1: Year at a Glance

Overview

Algebra and Number builds algebraic reasoning and number sense through work with absolute value of real numbers, operations on radicals and radical equations, and rational expressions and equations. Students extend operations on radicals and rational expressions from earlier grades into more complex forms [See the curriculum: 1, 2](#).

Trigonometry develops trigonometric reasoning through angles in standard position from 0° to 360° and the use of primary trigonometric ratios, the sine law, and the cosine law, including the ambiguous case. [See the curriculum: 1, 2](#).

Relations and Functions develops algebraic and graphical reasoning through the study of relations. This strand covers absolute value and reciprocal functions, arithmetic and geometric sequences and series [See the curriculum: 1, 2](#).

The year at a glance

Mathematics 20-1

Unit	General outcomes	Specific outcomes
Algebra and Number	Develop algebraic reasoning and number sense.	It is expected that students will: Determine equivalent forms of rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials). (see the curriculum); It is expected that students will: Perform operations on rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials). (see the curriculum); It is expected that students will: Solve problems that involve radical equations (limited to square roots). (see the curriculum); It is expected that students will: Solve problems that involve rational equations (limited to numerators and denominators that are monomials, binomials or trinomials). (see the curriculum); It is expected that students will: Demonstrate an understanding of the absolute value of real numbers. (see the curriculum); It is expected that students will: Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands. (see the curriculum)

Trigonometry	Develop trigonometric reasoning.	It is expected that students will: Demonstrate an understanding of angles in standard position [0° to 360°]. (see the curriculum); It is expected that students will: Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position. (see the curriculum); It is expected that students will: Solve problems, using the cosine law and sine law, including the ambiguous case. (see the curriculum)
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Relations and Functions	Develop algebraic and graphical reasoning through the study of relations.	It is expected that students will: Solve problems that involve quadratic equations. (see the curriculum); It is expected that students will: Analyze arithmetic sequences and series to solve problems. (see the curriculum); It is expected that students will: Graph and analyze reciprocal functions (limited to the reciprocal of linear and quadratic functions). (see the curriculum); It is expected that students will: Factor polynomial expressions of the form: - - -... (see the curriculum); It is expected that students will: Solve problems that involve linear and quadratic inequalities in two variables. (see the curriculum); It is expected that students will: Analyze quadratic functions of the form $y=a(x-p)^2+q$ and determine the: - vertex - domain and range - direction of opening - axis of symmetry - x- and y-intercepts. (see the curriculum); It is expected that students will: Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables. (see the curriculum); It is expected that students will: Analyze quadratic functions of the form $y=ax^2+bx+c$ to identify characteristics of the corresponding graph, including: - vertex - domain and range - direction of opening - axis of symmetry - x-... (see the curriculum); It is expected that students will: Analyze geometric sequences and series to solve problems. (see the curriculum); It is expected that students will: Solve problems that involve quadratic inequalities in one variable. (see the curriculum); It is expected that students will: Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems. (see the curriculum)
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Across the year

- Absolute value and radicals introduced in Algebra and Number reappear as absolute value functions and quadratic equations involving radicals in Relations and Functions. [See the curriculum: 1, 2, 3, 4.](#)
- Factoring polynomial expressions supports the analysis of quadratic functions in both vertex and standard form and the solving of quadratic equations and inequalities. [See the curriculum: 1, 2, 3, 4, 5.](#)
- Rational expressions and equations from Algebra and Number connect to reciprocal functions in Relations and Functions, since both rely on understanding restrictions and behaviour near non-

permissible values. [See the curriculum: 1, 2, 3, 4.](#)

- Trigonometry and Relations and Functions both emphasize problem solving and the use of technology, with the sine and cosine laws applied to triangle problems while systems of linear-quadratic and quadratic-quadratic equations are solved algebraically and graphically. [See the curriculum: 1, 2, 3.](#)
- Sequences and series give students a second context, alongside quadratic functions, for recognizing and generalizing patterns algebraically. [See the curriculum: 1, 2.](#)