

APA Alberta-based Math Curricula: Grade 9 Math

Numbers

- Classify numbers
- Compare rational numbers
- Put rational numbers in order
- Number lines
- Convert between decimals and fractions
- Square roots of perfect squares
- Square roots of fractions and decimals
- Estimate square roots

Operations

- Add, subtract, multiply and divide integers
- Order of operations with integers
- Evaluate variable expressions involving integers
- Add and subtract rational numbers
- Add and subtract rational numbers: word problems
- Multiply and divide rational numbers
- Multiply and divide rational numbers: word problems
- Order of operations with rational numbers
- Evaluate variable expressions involving rational numbers

Ratios and proportions

- Identify equivalent ratios
- Equivalent ratios: fill in the missing number
- Unit rates
- Unit prices
- Solve proportions
- Solve proportions: word problems
- Scale drawings and scale factors

Percents

- Convert between percents, fractions and decimals
- Solve percent equations
- Percent word problems
- Percent of change
- Percent of change: word problems

Geometry

- Parts of a circle
- Perimeter
- Area
- Area of compound figures
- Area between two shapes
- Circles: calculate area, circumference, radius and diameter
- Circles: word problems
- Symmetry
- Count lines of symmetry
- Draw lines of symmetry
- Interior angles of polygons
- Transversal of parallel lines
- Volume of prisms and pyramids
- Volume of cones and cylinders
- Volume of spheres

- Nets of 3-dimensional figures
- Surface area of prisms and pyramids
- Surface area of cones and cylinders
- Surface area of spheres
- Similar figures: side lengths and angle measures
- Similar triangles and indirect measurement
- Area and perimeter of similar figures
- Similar solids
- Volume and surface area of similar solids
- Perimeter, area and volume: changes in scale
- Identify reflections, rotations and translations
- Reflections, rotations and translations: find the coordinates
- Reflections, rotations and translations: graph the image
- Dilations and scale factors
- Pythagorean theorem
- Pythagorean theorem: word problems
- Converse of the Pythagorean theorem: is it a right triangle?

Coordinate graphs

- Points on coordinate graphs
- Quadrants and axes
- Distance between two points

Properties

- Properties of addition and multiplication
- Distributive property
- Simplify variable expressions using properties
- Properties of equality

Exponents

- Exponents with integer bases
- Exponents with decimal and fractional bases
- Negative exponents
- Multiplication with exponents
- Division with exponents
- Multiplication and division with exponents
- Power rule
- Simplify expressions involving exponents

Scientific notation

- Convert between standard and scientific notation
- Compare numbers written in scientific notation
- Multiply numbers written in scientific notation
- Divide numbers written in scientific notation

Problem solving

- Word problems: mixed review
- Word problems with money
- Consecutive integer problems
- Rate of travel: word problems
- Weighted averages: word problems

Number sequences

- Identify arithmetic and geometric sequences
- Arithmetic sequences
- Geometric sequences

- Evaluate variable expressions for number sequences
- Write variable expressions for arithmetic sequences
- Write variable expressions for geometric sequences
- Number sequences: mixed review

Variable expressions and equations

- Write variable expressions
- Simplify variable expressions involving like terms and the distributive property
- Write variable equations
- Does x satisfy the equation?
- Solve equations using order of operations

Solve equations

- Model and solve equations using algebra tiles
- Write and solve equations that represent diagrams
- Solve one-step linear equations
- Solve two-step linear equations
- Solve advanced linear equations
- Solve equations with variables on both sides
- Identities and equations with no solutions
- Solve linear equations: word problems
- Solve linear equations: mixed review

Single-variable inequalities

- Graph inequalities
- Write inequalities from graphs
- Identify solutions to inequalities
- Solve one-step linear inequalities: addition and subtraction
- Solve one-step linear inequalities: multiplication and division
- Solve one-step linear inequalities
- Graph solutions to one-step linear inequalities
- Solve two-step linear inequalities
- Graph solutions to two-step linear inequalities
- Solve advanced linear inequalities
- Graph solutions to advanced linear inequalities

Data and graphs

- Interpret bar graphs, line graphs and histograms
- Create bar graphs, line graphs and histograms
- Circle graphs
- Interpret stem-and-leaf plots
- Interpret box-and-whisker plots
- Interpret a scatter plot
- Scatter plots: line of best fit

Relations and functions

- Relations: convert between tables, graphs, mappings and lists of points
- Identify independent and dependent variables
- Identify functions
- Identify functions: vertical line test
- Complete a function table
- Evaluate function rules I
- Evaluate function rules II
- Graph a function
- Write a function rule: word problems
- Find points on a function graph

- Write a rule for a function table

Direct variation

- Identify proportional relationships
- Find the constant of variation
- Graph a proportional relationship
- Write direct variation equations
- Write and solve direct variation equations

Linear functions

- Identify linear functions
- Find the slope of a graph
- Find slope from two points
- Find a missing coordinate using slope
- Slope-intercept form: find slope and y-intercept
- Slope-intercept form: graph an equation
- Slope-intercept form: write an equation from a graph
- Slope-intercept form: write an equation
- Linear equations: solve for y
- Linear function word problems
- Write equations in standard form
- Standard form: find x- and y-intercepts
- Standard form: graph an equation
- Equations of horizontal and vertical lines
- Graph a horizontal or vertical line
- Point-slope form: graph an equation
- Point-slope form: write an equation from a graph
- Point-slope form: write an equation
- Slopes of parallel and perpendicular lines
- Write an equation for a parallel or perpendicular line

Systems of linear equations

- Is (x, y) a solution to the system of equations?
- Solve a system of equations by graphing
- Solve a system of equations by graphing: word problems
- Find the number of solutions to a system of equations by graphing

Monomials

- Identify monomials
- Multiply monomials
- Multiply monomials to find area
- Divide monomials
- Multiply and divide monomials
- Powers of monomials

Polynomials

- Polynomial vocabulary
- Model polynomials with algebra tiles
- Add and subtract polynomials using algebra tiles
- Add and subtract polynomials
- Add polynomials to find perimeter
- Multiply a polynomial by a monomial
- Multiply polynomials to find area
- Divide a polynomial by a monomial

Logic

- Identify hypotheses and conclusions
- Counterexamples

Probability

- Theoretical probability
- Experimental probability
- Compound events: find the number of outcomes
- Identify independent and dependent events
- Probability of independent and dependent events

Statistics

- Calculate mean, median, mode and range
- Interpret charts to find mean, median, mode and range
- Mean, median, mode and range: find the missing number
- Quartiles
- Identify biased samples