

Mathletics

Alberta Program of Studies (2026)

Activities (Courses) and Skill Quests



Grades 7-9

July, 2026

Mathletics

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Grade 7

Number

Students analyze positive and negative numbers.

7.N.Positive and negative numbers

Activities		Skills & Procedures
Rational numbers	Absolute Value	Relate the absolute value of positive and negative numbers, including decimal numbers and fractions, to their positions on the number line.
	Fraction to Terminating Decimal	Convert between fractions and decimal numbers, including negative numbers.
	Decimals to Fractions 2	
	Ordering Integers (Number Line)	Compare and order positive and negative numbers, including decimal numbers and fractions.
	Comparing Integers	
Skill Quests		Skills & Procedures
Rational numbers	Introducing absolute value	- Relate the absolute value of positive and negative numbers, including decimal numbers and fractions, to their positions on the number line. - Convert between fractions and decimal numbers, including negative numbers. - Compare and order positive and negative numbers, including decimal numbers and fractions.
	Converting between fractions & decimals	
	Comparing & ordering positive & negative numbers	

Students apply operations to positive and negative numbers.

7.N.Operations with positive and negative numbers

Activities		Skills & Procedures
Operations with integers	Negative or Positive?	Add and subtract any two integers.
	Adding Integers: Positive, Negative or Zero	
	Add Integers	
	Subtract Integers	
	Integers: Add and Subtract	
	Multiplying and Dividing Integers	Multiply and divide any two integers.
	Integers: Multiply and Divide	
Skill Quests		Skills & Procedures
Operations with integers	Adding & subtracting integers using models	- Add and subtract any two integers. - Solve problems involving addition and subtraction of integers. - Multiply and divide any two integers.
	Adding & subtracting integers using patterns	
	Adding & subtracting integers	
	Multiplying & dividing integers using models	
	Multiplying & dividing integers using patterns	
	Multiplying & dividing integers	

Students interpret perfect squares and perfect cubes.

7.N.Perfect squares and cubes

Activities		Skills & Procedures
Perfect squares & cubes	Square Roots	Recall perfect squares within 144 and their square roots, limited to natural numbers.
Skill Quests		Skills & Procedures
Perfect squares & cubes	Perfect squares	- Identify the base and exponent in a perfect square. - Model a given perfect square as a square region. - Express perfect squares and square roots symbolically. - Recall perfect squares within 144 and their square roots, limited to natural numbers. - Identify the base and exponent in a perfect cube. - Model a given perfect cube as a cubic region. - Express perfect cubes and cube roots symbolically. - Recall perfect cubes within 125 and their cube roots, limited to natural numbers. - Solve problems involving volume of cubes, limited to edge lengths that are natural numbers.
	Perfect squares & square roots	
	Perfect cubes	
	Perfect cubes & cube roots	
	Perfect squares & cubes	
	Volume of a cube	

Students interpret multiplication and division of positive fractions and of positive decimal numbers.

7.N.Multiply and divide fractions and decimals

Activities		Skills & Procedures
Multiply & divide fractions & decimals	Multiply Fraction by Fraction	- Model multiplication of fractions. - Multiply two fractions.
	Multiply Two Fractions 1	Multiply two fractions.
	Divide Fractions Visual Model	Divide a natural number by a fraction and vice versa.
	Divide by a Unit Fraction	
	Divide Whole Number by Fraction	
	Dividing Fractions	Divide a fraction by a fraction.
	Multiply Decimals 1	Multiply and divide decimal numbers, including dividing a natural number by a decimal number.
	Multiply Decimals: Area Model	
	Decimal by Decimal	
Order of operations	Integers: Order of Operations (BEDMAS)	Evaluate numerical expressions according to the order of operations.
Skill Quests		Skills & Procedures
Multiply & divide fractions & decimals	Multiplying fractions	- Multiply two fractions. - Divide a natural number by a fraction and vice versa. - Divide a fraction by a fraction. - Multiply and divide decimal numbers, including dividing a natural number by a decimal number. - Solve problems involving decimal numbers, including in real-world situations. - Evaluate numerical expressions according to the order of operations.
	Dividing fractions & natural numbers	
	Dividing fractions	
	Multiplying decimals	
	Dividing decimals	
	Decimal word problems	
	Order of operations	

Students analyze multiplicative relationships between equivalent ratios.

7.N.Ratios

Activities		Skills & Procedures
Multiplicative relationships	Ratios	- Determine the factor that relates equivalent ratios. - Determine an unknown value related to a given equivalent ratio. - Generate an equivalent ratio, using two existing equivalent ratios.
	Equivalent Ratios	
	Solve Proportions	
	Calculating Percentages 1	- Determine the factor that relates equivalent ratios. - Determine an unknown value related to a given equivalent ratio. - Determine percentages of natural numbers less than 1% and greater than 100%.
	Percentage of a Quantity	
	Quantities to Percentages (no units)	
	Quantities to Percentages (with units)	
	Percentage Change: Increase and Decrease	Solve problems involving proportional reasoning in real-world situations.
	Percent Increase and Decrease	
Skill Quests		Skills & Procedures
Multiplicative relationships	Equivalent ratios	- Determine the factor that relates equivalent ratios. - Determine an unknown value in given equivalent ratios. - Generate an equivalent ratio, using two existing equivalent ratios. - Determine a percentage of a natural number by iterating or partitioning benchmark percentages. - Determine percentages of natural numbers less than 1% and greater than 100%. - Solve problems involving proportional reasoning in real-world situations.
	Percentage of a number	
	Percentage of a number less than 1%	
	Percentage of a number greater than 100%	
	Discounts	
	Percent increase & decrease	

Algebra

Students apply equivalence to solving linear equations.

7.A.Linear equations

Activities		Skills & Procedures
Expressions & equations	Using the Distributive Property	Simplify algebraic expressions on one or both sides of an equation, using algebraic properties, including the distributive property.
	Solving More Equations	Solve linear equations with algebraic terms on both sides of the equation.
	Solve Multi-Step Equations	Simplify algebraic expressions on one or both sides of an equation, using algebraic properties, including the distributive property.
	Equations with Grouping Symbols	- Simplify algebraic expressions on one or both sides of an equation, using algebraic properties, including the distributive property. - Solve linear equations with algebraic terms on both sides of the equation.
	Checking Solutions	Verify the solution to a linear equation by substituting the solution into any equivalent equation.
Skill Quests		Skills & Procedures
Expressions & equations	Simplifying algebraic expressions	- Simplify algebraic expressions on one or both sides of an equation, using algebraic properties, including the distributive property. - Solve linear equations with algebraic terms on both sides of the equation. - Verify the solution to a linear equation by substituting the solution into any equivalent equation.
	Solving equations with variables on both sides	
	Verifying solutions	

Geometry

Students analyze the structure and relationships of geometric objects.

7.G.Geometry

Activities		Skills & Procedures
Geometry	What Line am I?	- Differentiate between straight lines, rays, line segments, angles, and polygons. - Identify straight lines, rays, line segments, angles, and triangles, using symbols and symbolic notation.
	Vertically Opposite Angles: Unknown Values	- Investigate angle relationships at the intersection of two straight lines. - Solve problems involving angle relationships at intersections.
	Introduction to Angles on Parallel Lines 1	Identify corresponding angles at intersections of parallel lines and a transversal.
	Introduction to Angles on Parallel Lines 3	
	Parallel Lines	
	Angles on Parallel Lines	- Identify corresponding angles at intersections of parallel lines and a transversal. - Solve problems involving angle relationships at intersections.
	Angles and Parallel Lines	
	Congruent Figures: Find Values	- Identify corresponding sides and corresponding angles of congruent polygons. - Solve problems involving congruent polygons.
Skill Quests		Skills & Procedures
Geometry conventions	Labelling & naming conventions	- Differentiate between straight lines, rays, line segments, angles, and polygons. - Identify straight lines, rays, line segments, angles, and triangles, using symbols and symbolic notation.
	Identifying parallel & perpendicular lines	
Angle relationships	Exploring opposite angles	- Investigate angle relationships at the intersection of two straight lines. - Identify corresponding angles at intersections of parallel lines and a transversal. - Solve problems involving angle relationships at intersections.
	Exploring adjacent angles	
	Exploring angle relationships on parallel lines	
	Determining unknown angles on parallel lines	
Congruent polygons	Identifying congruent polygons	- Identify corresponding sides and corresponding angles of congruent polygons. - Represent relationships between geometric objects, using symbols and symbolic notation. - Identify congruent angles and congruent line segments indicated with symbols in congruent polygons. - Verify that geometric objects are congruent, using symbolic notation. - Solve problems involving congruent polygons.

Measurement

Students interpret and explain area and circumference of circles. 7.M.Area and circumference of circles		
Activities		Skills & Procedures
Area & circumference of circles	Circumference: Circles	Calculate the area and circumference of a circle, given its radius or diameter and using 3.14 as an approximation for π.
	Area: Circles 1	
Skill Quests		Skills & Procedures
Area & circumference of circles	Identifying parts of a circle	- Determine the diameter of a circle, given its circumference and using 3.14 as an approximation for π. - Calculate the area and circumference of a circle, given its radius or diameter and using 3.14 as an approximation for π.
	Calculating the circumference of a circle	
	Calculating the area of a circle	

Students analyze volume of right prisms and right cylinders. 7.M.Volume		
Activities		Skills & Procedures
Volume	Volume: Rectangular Prisms 2	Calculate the volume of rectangular prisms, triangular prisms, and cylinders.
	Volume of Triangular prisms	
	Volume: Triangular Prisms	
	Volume: Cylinders	
Skill Quests		Skills & Procedures
Volume of prisms & cylinders	Calculating the volume of rectangular prisms	- Calculate the volume of rectangular prisms, triangular prisms, and cylinders. - Determine the area of the base of rectangular prisms, triangular prisms, and cylinders, given volume and height. - Determine the height of rectangular prisms, triangular prisms, and cylinders, given volume and area of the base. - Solve problems involving volume of prisms and cylinders.
	Calculating the volume of triangular prisms	
	Calculating the volume of cylinders	
	Volume word problems	

Functions

Students interpret functions through domain and range. 7.F.Functions		
Activities		Skills & Procedures
Functions	Vertical Line Test	Determine whether a relation is a function.
Skill Quests		Skills & Procedures
Functions	Introducing functions	- Determine whether a relation is a function. - Graph a function that models a real-world situation, given a table of values.
	Graphing functions	

Statistics

Students interpret sample data. 7.S.Statistics		
Activities		Skills & Procedures
Statistics	The Mean	Determine mean, median, mode, and range for a set of quantitative data collected from a representative sample.
	The Median	
	Mode	
	Data Extremes and Range	
	Which Measure of Central Tendency?	Compare statistics from two different samples of the same population.
Skill Quests		Skills & Procedures
Statistics	Sampling	- Identify the population for a statistical question. - Describe a representative sample for a population in relation to a statistical question. - Determine mean, median, mode, and range for a set of quantitative data collected from a representative sample. - Compare statistics from two different samples of the same population. - Draw conclusions about a population, using statistics from a representative sample.
	Mean	
	Mode	
	Median	
	Range	
	Comparing statistics	
	Drawing conclusions	

Probability

Students interpret theoretical and experimental probability. 7.P.Probability		
Activities		Skills & Procedures
Probability	What are the Chances?	Describe one outcome as more or less likely than another outcome.
	Introductory probability	Express, in various ways, the theoretical probability for each of the possible outcomes in a situation.
	Find the Probability	
	Simple Probability	
Skill Quests		Skills & Procedures
Probability	Identifying the sample space	- Describe favourable outcomes for a given event. - Describe one outcome as more or less likely than another outcome. - Describe situations where not all events are equally likely. - Explain certain and impossible events. - Express, in various ways, the theoretical probability for each of the possible outcomes in a situation. - Predict the experimental probability of an event, using theoretical probability. - Determine the experimental probability of an event. - Compare the experimental probability to the theoretical probability for a given event.
	Likelihood	
	Expressing theoretical probability	
	Predicting experimental probability	
	Experimental & theoretical probability	

Grade 8

Number

Students interpret rational and irrational numbers. 8.N.Rational and irrational		
Activities		Skills & Procedures
Rational & irrational numbers	Fraction to Terminating Decimal	Express rational numbers as fractions and decimal numbers.
	Decimals to Fractions 2	
	Recurring Decimals	Investigate fractions that result in repeating decimals.
	Ordering Integers (Number Line)	- Compare and order rational numbers. - Compare and order real numbers.
	Comparing Integers	
	Comparing Fractions with Signs	- Distinguish between rational numbers and irrational numbers. - Relate an irrational number to its approximate position on the number line.
	Irrational Numbers	
Operations with rational numbers	Add Decimals: Same Sign	Add, subtract, multiply, and divide any two rational numbers.
	Add Decimals: Different Signs	
	Add Mixed Numbers: Same Sign	
	Subtract Mixed Numbers: Signs Differ	
	Subtract Negative Mixed Numbers	
	Operations with Fractions	
	Divide Mixed Numbers with Signs	
	Add Integers	
	Subtract Integers	
	Integers: Add and Subtract	
	More with Integers	
	Integers: Multiply and Divide	
	Integers: Operations Order	
Skill Quests		Skills & Procedures
Rational & irrational numbers	Rational numbers as fractions & decimals	- Express rational numbers as fractions and decimal numbers. - Classify natural numbers, integers, and rational numbers. - Relate a rational number to its position on the number line. - Approximate an irrational number as a rounded decimal. - Compare and order rational numbers. - Investigate fractions that result in repeating decimals. - Distinguish between rational numbers and irrational numbers. - Relate an irrational number to its approximate position on the number line. - Compare and order real numbers.
	Classifying real numbers	
	Rational & irrational numbers on the number line	
	Comparing rational & irrational numbers	
	Understanding rational & irrational numbers	
	Approximating the value of irrational numbers	
Operations with rational numbers	Adding fractions	- Add, subtract, multiply, and divide any two rational numbers. - Evaluate numerical expressions involving rational numbers according to the order of operations. - Solve problems involving rational numbers in real-world situations.
	Subtracting fractions	
	Multiplying fractions	
	Dividing fractions	
	Adding/subtracting positive & negative fractions	

	Multiplying/dividing positive & negative fractions	
	Order of operations with rational numbers	
	Real-world problems	
	Adding/subtracting positive & negative decimals	
	Multiplying/dividing positive & negative decimals	
	Adding/subtracting integers	
	Multiplying/dividing integers	

Students interpret square roots of perfect and non-perfect squares.

8.N.Square roots

Activities		Skills & Procedures
Square roots	Square Roots	Express perfect and non-perfect squares as repeated multiplication and as powers.
	Square Roots 1	
	Estimating Square Roots	Approximate the square roots of non-perfect squares, within 144.
Skill Quets		Skills & Procedures
Square roots	Square roots of perfect squares	- Express perfect and non-perfect squares as repeated multiplication and as powers. - Approximate the square roots of non-perfect squares, within 144. - Determine the area of a square, given the side length. - Determine the side length of a square, given its area. - Solve problems involving perimeter and area of squares.
	Square roots of non-perfect squares	

Students analyze multiplicative relationships within ratios.

8.N.Ratios

Activities		Skills & Procedures
Ratios & rates	Rates	- Determine the constant of proportionality for a given ratio. - Solve problems that involve quantities related by a constant of proportionality, including in real-world situations.
	Rate Word Problems	Solve problems that involve quantities related by a constant of proportionality, including in real-world situations.
	Best Buy	
	Solve Proportions	
	Proportional Relationships	
	Using Similar Triangles	
Skill Quets		Skills & Procedures
Multiplicative relationships	Constant of proportionality	- Determine the constant of proportionality for a given ratio. - Solve problems that involve quantities related by a constant of proportionality, including in real-world situations.
	Real-world ratio problems	
	Rates	

Algebra

Students interpret powers in single-variable algebraic terms.

8.A.Expressions

Activities	Skills & Procedures
Recognising Like Terms	Add and subtract monomials by combining like terms.

Expressions, equations & inequalities	Like Terms: Add, Subtract	
 Skill Quests		Skills & Procedures
Algebraic expressions	Adding & subtracting monomials	- Express an algebraic term as multiplication of a coefficient and variable factors and vice versa. - Express algebraic terms, using conventional representations. - Add and subtract monomials by combining like terms.
	Multiplying variables	

Students solve single-variable linear equations involving rational numbers.

8.A.Linear equations

 Activities		Skills & Procedures
Expressions, equations & inequalities	Solving More Equations	- Solve equations with rational coefficients. - Solve linear equations, including with parentheses and variables on both sides of the equation.
	Solve Multi-Step Equations	
	Equations with Grouping Symbols	
	Equations with Decimals	
	Equations with Fractions	
	Equations with Fractions 2	
	Find the Mistake	
 Skill Quests		Skills & Procedures
Linear equations	Solving equations with rational coefficients	- Solve equations with rational coefficients. - Solve linear equations, including with parentheses and variables on both sides of the equation.

Students interpret inequalities.

8.A.Inequalities

 Activities		Skills & Procedures
Expressions, equations & inequalities	Inequalities on a Number Line: Basics	Model inequalities on the number line.
	Inequalities on a Number Line: Mixed Basics	
 Skill Quests		Skills & Procedures
Inequalities	Understanding inequalities	- Model inequalities on the number line. - Verify, by substitution, whether a number is a solution of an inequality. - Represent a real-world situation as an inequality.
	Verifying solutions of inequalities	
	Modelling inequalities on the number line	
	Writing inequalities	

Geometry

Students interpret similarity through scale factor.

8.G.Similarity

 Activities		Skills & Procedures
Similarity	Scale Factor	Determine the scale factor of similar geometric objects.
	Scale	Solve problems involving scale factor in real-world situations.
	Scale Measurement	
	Similar Figures	Verify that geometric objects are similar, using the Cartesian plane or straight lines.

Skill Quests		Skills & Procedures
Similarity	Determining the scale factor	- Determine the scale factor of similar geometric objects. - Apply scale factor to objects. - Solve problems involving areas of similar geometric objects. - Solve problems involving scale factor in real-world situations. - Dilate a geometric object in the Cartesian plane, given dilation centre (0,0) and a scale factor, using hands-on materials or a digital geometry environment. - Determine the coordinates of the vertices of a similar polygon, given dilation centre (0,0), a scale factor, and the coordinates of the polygon's vertices. - Verify that geometric objects are similar, using the Cartesian plane or straight lines.
	Enlarging shapes using the scale factor	
	Scale factors as ratios	
	Finding a missing side length	
	Solving real-world problems using scale factor	
	Solving area problems involving similar objects	
	Dilations	
	Identifying similar shapes on the Cartesian plane	

Students analyze and explain triangle problems, using theorems.

8.G.Triangles

Activities		Skills & Procedures
Triangles	Angle Measures in a Triangle	Justify unknown interior angle measures in triangles, using angle theorems.
	Angle Sum of a Triangle	
	Pythagorean Triads	Prove that a geometric object is a triangle, given the three side lengths.
	Hypotenuse of a Right Triangle	
	Pythagoras: Find a Short Side (integers only)	Determine an unknown side length in a right triangle, given any two side lengths, using the Pythagorean theorem.
	Pythagoras: Find a short side (rounding needed)	
	Pythagoras: Find a Short Side (decimal values)	
	Pythagoras' Theorem	

Skill Quests		Skills & Procedures
Triangles	Calculating the interior angles of a triangle	- Justify unknown interior angle measures in triangles, using angle theorems. - Prove that a geometric object is a triangle, given the three side lengths. - Determine an unknown side length in a right triangle, given any two side lengths, using the Pythagorean theorem. - Solve problems involving triangles, using theorems.
	Triangle inequality theorem	
	Labelling right triangles	
	Proving right triangles, Pythagorean theorem	
	Finding the length of an unknown side, short side	
	Finding the length of an unknown side, hypotenuse	
	Finding the length of an unknown side, mixed	
	Real-world problems using the Pythagorean theorem	

Measurement

Students analyze the surface area of right 3-D shapes, using 2-D models.

8.M.Surface area

Activities		Skills & Procedures
Surface area	Nets	Relate each shape on a net to the corresponding face of a 3-D shape.
	Surface Area: Rectangular Prisms	Solve problems involving surface area of polyhedrons and cylinders.
	Surface Area: Triangular Prisms 1	
	Surface Area: Triangular Prisms	
	Surface Area: Square Pyramids	
	Surface Area: Cylinders	
Skill Quests		Skills & Procedures
Surface area	Understanding nets	- Calculate the surface area of various polyhedrons and cylinders, using a 2-D model. - Solve problems involving surface area of polyhedrons and cylinders, including in real-world situations. - Predict the 3-D shape modelled by a net. - Relate each shape on a net to the corresponding face of a 3-D shape.
	Finding the surface area using a net	

Functions

Students relate linear functions to equations and graphs. 8.F.Functions		
Activities		Skills & Procedures
Linear functions	Slope of a Line	Calculate the slope of a line, given two points on the line.
	Equation of a Line 1	Express a linear function as an equation in slope-intercept form, given the graph.
	Determining a Rule for a Line	
	Which Straight Line?	
	Are they Parallel?	Compare the slopes of various parallel lines.
	Are they Perpendicular?	Compare the slopes of various perpendicular lines.
	Horizontal and Vertical Lines	Express a horizontal or vertical line as an equation.
	Intercepts	Express, as an ordered pair, the x- and y-intercepts of a linear function from a graph or equation.
	Gradients for Real	Investigate how variations of slope and y-intercepts contextually affect the rate of change of a linear function.
Skill Quests		Skills & Procedures
Linear functions	Understanding slope	- Calculate the slope of a line, given two points on the line. - Compare the slopes of various parallel lines. - Compare the slopes of various perpendicular lines. - Investigate how b and m in the equation $y = mx + b$ affect the vertical position and steepness of a graph. - Graph a linear function, given slope and one point on the line. - Solve problems involving rate of change from various representations modelling real-world situations. - Express, as an ordered pair, the x- and y-intercepts of a linear function from a graph or equation. - Express a linear function as an equation in slope-intercept form, given the graph. - Graph a linear function, given the equation. - Express a horizontal or vertical line as an equation. - Graph horizontal and vertical lines.
	Understanding the equation $y = mx + b$	
	Identifying the equation of a line	
	Graphing linear functions	
	Understanding horizontal & vertical lines	
	Parallel & perpendicular lines	
	Identifying the x - & y -intercepts	
	Comparing linear functions	
	Real-world problems involving linear functions	
	Rate of change & initial value	

Statistics

Students analyze distributions, using shape. 8.S.Statistics		
Activities		Skills & Procedures
Statistics	Histograms	- Describe the shape of distributions. - Represent distributions, using histograms with equal intervals.
	Which Measure of Central Tendency?	Justify the choice of mean, median, or mode to typify a data set for distributions of various shapes.
	Circle Graphs	Analyze circle graphs to solve problems.
	Creating a Sector Graph	Represent data, using a circle graph.
Skill Quests		Skills & Procedures
Analyze distributions	Describing the shape of distributions	- Describe the shape of distributions. - Represent distributions, using histograms with equal intervals. - Justify the choice of mean, median, or mode to typify a data set for distributions of various shapes.
	Constructing & interpreting histograms	
	Appropriate measure of central tendency	
Circle graphs	Constructing & interpreting circle graphs	- Represent data, using a circle graph. - Analyze circle graphs to solve problems.

Probability

Students interpret probability of independent and dependent events. 8.P.Probability		
Activities		Skills & Procedures
Probability	Dice and Coins	Determine the probability of two or more independent events by modelling the sample space.
	Tree Diagrams	
Skill Quests		Skills & Procedures
Probability	Understanding independent & dependent events	- Determine whether two events are independent or dependent. - Determine the probability of two or more independent events by modelling the sample space.
	Identifying the sample space, independent events	
	Determining the probability using the sample space	

Grade 9

Number

Students analyze sets of real numbers. 9.N.Real numbers		
Activities		Skills & Procedures
Teacher directed		
Skill Quests		Skills & Procedures
Real numbers	Classifying real numbers	Identify the subsets to which a real number belongs.

Students analyze exponent laws and powers of 10. 9.N.Laws and powers		
Activities		Skills & Procedures
Exponent laws & scientific notation	Properties of Exponents	Simplify expressions that include powers, using exponent laws limited to integer values for a, b, m, n.
	The Zero Exponent	
	Negative Exponents	
	Integer Exponents	
	Simplifying with Exponent Laws 1	
	Scientific Notation	- Express numbers of very large and very small magnitude, using scientific notation. - Convert between scientific notation and decimal numbers.
	Scientific Notation to Decimal	Convert between scientific notation and decimal numbers.
Skill Quests		Skills & Procedures
Exponent laws	Product of powers	- Investigate the role of parentheses in powers. - Justify exponent laws, using repeated multiplication. - Justify the zero exponent law. - Justify the negative exponent law. - Simplify expressions that include powers, using exponent laws limited to integer values for a, b, m, n.
	Quotient of powers	
	Power of a power	
	Power of a quotient	
	Zero exponent	
	Negative exponent	
	Simplifying expressions with exponent laws	
Powers of 10	Powers of 10	Investigate the relationship between powers of 10 and place value.
Scientific notation	Scientific notation	- Express numbers of very large and very small magnitude, using scientific notation. - Convert between scientific notation and decimal numbers. - Discuss scientific notation in real-world situations.

Algebra

Students interpret arithmetic operations, using single-variable polynomials. 9.A.Polynomials		
Activities		Skills & Procedures
Polynomials	Algebraic Multiplication	Multiply monomials.
	Expanding Brackets	Expand and simplify two polynomials with three terms or less.
	Expanding with Negatives	

	Expand then Simplify	
	Expanding Binomial Products	
	Special Binomial Products	
	Factoring	Factor polynomial expressions involving common factors.
	Factoring Expressions	Factor polynomials in the form $x^2 + bx + c$.
	Factoring Quadratics 1	
	Completing the Square	
 Skill Quests		Skills & Procedures
Polynomials	Expanding polynomials, $a(b + c)$	- Expand and simplify two polynomials with three terms or less. - Factor polynomial expressions involving common factors. - Factor polynomials in the form $x^2 + bx + c$. - Factor polynomial expressions, using difference of squares, limited to integer numbers.
	Expanding polynomials, $(a + b)(c + d)$	
	Recognizing & applying special products	
	Factoring polynomials	
	Factoring polynomials, $x^2 + bx + c$	

Students solve single-variable simple quadratic equations. 9.A.Quadratic equations		
 Activities		Skills & Procedures
Quadratic equations	Simple Quadratic Equations - How Many Solutions?	Determine the number of solutions for a quadratic equation in the form $x^2 = a$ for values of a less than, greater than, and equal to 0.
	Equations: Simple quadratics	Solve quadratic equations in the form $x^2 = a$, including in real-world situations.
 Skill Quests		Skills & Procedures
Quadratic equations	Solving quadratic equations, $x^2 = a$	- Solve quadratic equations in the form $x^2 = a$, including in real-world situations. - Solve quadratic equations in the form $x^2 + c = 0$, where c is an integer.

Students define solutions to single-variable linear inequalities. 9.A.Inequalities		
 Activities		Skills & Procedures
Inequalities	Solve One-Step Inequalities 1	Solve single-variable linear inequalities.
	Solve One-Step Inequalities 2	
	Graphing Inequalities on a Number Line	- Solve single-variable linear inequalities. - Represent the solution set for an inequality on the number line.
 Skill Quests		Skills & Procedures
Inequalities	Solving 1-step inequalities	- Solve single-variable linear inequalities. - Represent the solution set for an inequality on the number line. - Solve problems by using inequalities, including in real-world situations.
	Solving 2-step inequalities	
	Real-world situations involving inequalities	

Geometry

Students analyze relationships between triangles. 9.G.Triangles	
 Activities	Skills & Procedures

Triangles	Congruent Triangles	Justify the congruence of two triangles, using the properties of triangle congruence.
	Congruent Figures: Find Values	Determine the three pairs of equal sides and three pairs of equal angles, given the congruence statement for two triangles.
	Similar Triangles	Determine the three pairs of equal angles and the three pairs of proportional sides, given the similarity statement for two triangles.
	Similarity Proofs	Justify the similarity of two triangles, using the properties of triangle similarity.
👑 Skill Quests		Skills & Procedures
Triangles	Modelling congruent triangles	- Model congruent and similar triangles, using hands-on materials or a digital geometry environment. - Justify the congruence of two triangles, using the properties of triangle congruence. - Determine the three pairs of equal sides and three pairs of equal angles, given the congruence statement for two triangles. - Justify the similarity of two triangles, using the properties of triangle similarity. - Write a similarity statement for two similar triangles. - Determine the three pairs of equal angles and the three pairs of proportional sides, given the similarity statement for two triangles.
	Properties of triangle congruence	
	Identifying similar triangles	
	Properties of triangle similarity	

Measurement

Students analyze surface area and volume of right composite 3-D shapes.		
9.M.Surface area and volume		
📋 Activities		Skills & Procedures
Teacher directed		
👑 Skill Quests		Skills & Procedures
Surface area	Calculating the surface area of prisms	- Calculate the surface area of composite 3-D shapes composed of prisms, pyramids, and cylinders. - Solve problems involving surface area and volume of composite 3-D shapes.
	Calculating the surface area of pyramids	
	Calculating the surface area of cylinders	
	Calculating the surface area of composite shapes	
Volume	Calculating the volume of prisms	- Calculate the volume of composite 3-D shapes composed of prisms, pyramids, and cylinders, given the relevant formulas. - Solve problems involving surface area and volume of composite 3-D shapes.
	Calculating the volume of pyramids	
	Calculating the volume of cylinders	
	Calculating the volume of composite shapes	
Compare surface area & volume of prisms	Comparing the surface area & volume of prisms	Compare the surface areas of various rectangular prisms that have equal volumes, using cube structures or 2-D models.

Functions

Students connect linear functions to real-world situations.		
9.F.Functions		
📋 Activities		Skills & Procedures
Functions	Function Notation 1	Evaluate a function in function notation, given an input value.
👑 Skill Quests		Skills & Procedures
Functions	Expressing linear functions in function notation	Express a linear function in function notation, given two points from the graph.
	Expressing the domain & range	

	Determining the input & output value	- Express a linear function in function notation, given the slope and one point from the graph. - Interpret the meaning of x- and y-intercepts of linear functions within the context of real-world situations. - Express the domain and range of a linear function, using set-builder notation. - Evaluate a function in function notation, given an input value. - Determine the input value, given the output value of the function in function notation. - Generate an arithmetic sequence, given a function. - Predict input and output values of a linear function, using interpolation and extrapolation. - Solve problems involving linear functions.
	Interpreting the x - & y -intercepts	
	Predicting input & output values on graphs	

Statistics

Students analyze distributions, using spread. 9.S.Statistics		
Activities		Skills & Procedures
Statistics	Calculating Interquartile Range	Determine the range, five-number summary, and interquartile range for a distribution.
	Box-and-Whisker Plots 1	Interpret the spread of distributions represented by box plots.
	Box-and-Whisker Plots 2	
Skill Quests		Skills & Procedures
Statistics	Five-number summary & interquartile range	Determine the range, five-number summary, and interquartile range for a distribution.
	Box plots	- Represent distributions, using box plots. - Interpret the spread of distributions represented by box plots.

Probability

Students interpret probability of mutually exclusive and non-mutually exclusive events. 9.P.Probability		
Activities		Skills & Procedures
Probability	Probability With Replacement	Calculate the probability of the intersection of two independent events.
	Venn Diagrams	Model sample spaces and events with Venn diagrams.
	Complementary Events	Calculate the probability of an event, given the probability of its complement, and vice versa.
	Tree Diagrams	Calculate the probability of the intersection of two independent events.
	Probability - 'And' and 'Or'	- Calculate the probability of the union of two non-mutually exclusive events. - Calculate the probability of the union of two mutually exclusive events.
Skill Quests		Skills & Procedures
Probability	Complementary events	- Calculate the probability of the intersection of two independent events with or without a relevant formula. - Model sample spaces and events with Venn diagrams. - Determine the probability of the union of two non-mutually exclusive events. - Determine the probability of the union of two mutually exclusive events. - Identify complementary events. - Calculate the probability of an event, given the probability of its complement, and vice versa, with or without a relevant formula.
	Investigating mutually exclusive events	
	Venn diagrams	
	Probability with replacement	
	Probability without replacement	



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