

Mathletics

Alberta Mathematics Program of Studies



Grades K – 10

Mathletics

Alberta Mathematics Program of Studies



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Mathletics

Preamble

At Mathletics, we are committed to providing students, teachers, schools and districts with high-quality learning resources that align with the most up-to-date curricula.

Our team of educational publishers has created courses that specifically follow the Alberta Mathematics Program of Studies, 2007 (updated 2016) for Kindergarten to Grade 10. You can be assured that students have access to relevant and targeted content.

Courses consist of topics based on strands, including general and specific outcomes.

When a standard is best addressed by teacher directed activities, it is indicated in this document. Such activities may be explored using the Mathletics online eBooks, videos and interactives or through our engaging rich learning tasks.

This document outlines the curriculum alignment and acts as a useful guide when using Mathletics in your school.



Engage



Target



Diagnose



Assess



Report




Fluency




Mobile

Kindergarten


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	K.N.1	Say the number sequence 1 to 10 by 1s, starting anywhere from 1 to 10 and from 10 to 1.	Count to 5 How Many?
Number	Develop number sense	K.N.2	Subitize (recognize at a glance) and name familiar arrangements of 1 to 5 objects or dots.	Dot Display
Number	Develop number sense	K.N.3	Relate a numeral, 1 to 10, to its respective quantity.	Match numbers 1 to 10
Number	Develop number sense	K.N.4	Represent and describe numbers 2 to 10, concretely and pictorially.	Match numbers 1 to 10
Number	Develop number sense	K.N.5	Compare quantities 1 to 10, using one-to-one correspondence.	Order Numbers to 10 More, Less or the Same to 10
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	K.PR.1	Demonstrate an understanding of repeating patterns (two or three elements) by: <ul style="list-style-type: none"> identifying reproducing extending creating patterns using manipulatives, sounds and actions. 	Complete the Pattern Simple Patterns Missing it!
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	K.PR.2	Sort a set of objects based on a single attribute, and explain the sorting rule.	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	K.SS.1	Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight) and volume (capacity).	Everyday Length Balancing Act Everyday Mass Which Holds More?

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Kindergarten

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	K.SS.2	Sort 3-D objects, using a single attribute.	Same and Different
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	K.SS.3	Build and describe 3-D objects.	Match the Solid 1

Grade 1

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	1.N.1	Say the number sequence 0 to 100 by: <ul style="list-style-type: none"> 1s forward between any two given numbers 1s backward from 20 to 0 2s forward from 0 to 20 5s and 10s forward from 0 to 100. 	Dot Display How Many? Concept of Zero Counting Up to 20 Counting Back Within 20 Before, After and Between to 20
Number	Develop number sense	1.N.2	Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots.	Dot Display
Number	Develop number sense	1.N.3	Demonstrate an understanding of counting by: <ul style="list-style-type: none"> indicating that the last number said identifies "how many" showing that any set has only one count using counting-on using parts or equal groups to count sets. 	How Many? Counting Up to 20 1 More, 2 Less
Number	Develop number sense	1.N.4	Represent and describe numbers to 20, concretely, pictorially and symbolically.	Making Teen Numbers Make Numbers Count Matching numbers to 20
Number	Develop number sense	1.N.5	Compare sets containing up to 20 elements, using: <ul style="list-style-type: none"> referents one-to-one correspondence to solve problems. 	More, Less or the Same to 10 More, Less or the Same to 20
Number	Develop number sense	1.N.6	Estimate quantities to 20 by using referents.	More, Less or the Same to 10 More, Less or the Same to 20
Number	Develop number sense	1.N.7	Demonstrate an understanding of conservation of number.	More, Less or the Same to 10 More, Less or the Same to 20 1 More, 2 Less

Grade 1

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	1.N.8	Identify the number, up to 20, that is: <ul style="list-style-type: none"> one more two more one less two less than a given number.	Before, After and Between to 20 1 More, 2 Less
Number	Develop number sense	1.N.9	Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically, by: <ul style="list-style-type: none"> using familiar mathematical language to describe additive and subtractive actions creating and solving problems in context that involve addition and subtraction modelling addition and subtraction, using a variety of concrete and visual representations, and recording the process symbolically. 	Adding to Make 5 and 10 Add and Subtract Using Graphs Model Addition Adding to 5 Adding to Ten Addition Model Subtraction Subtracting From 5 Subtracting from Ten Subtraction Facts to 18
Number	Develop number sense	1.N.10	Describe and use mental mathematics strategies for basic addition facts and related subtraction facts to 18.	Adding to Ten Doubles and Near Doubles
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	1.PR.1	Demonstrate an understanding of repeating patterns (two to four elements) by: <ul style="list-style-type: none"> describing reproducing extending creating patterns using manipulatives, diagrams, sounds and actions.	Complete the Pattern Simple Patterns Missing it! Pattern Error


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Grade 1


Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	1.PR.2	Translate repeating patterns from one representation to another.	Teacher directed
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	1.PR.3	Sort objects, using one attribute, and explain the sorting rule.	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	1.PR.4	Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20).	Balancing Objects Balancing Act
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	1.PR.5	Record equalities, using the equal symbol.	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	1.SS.1	Demonstrate an understanding of measurement as a process of comparing by: <ul style="list-style-type: none"> identifying attributes that can be compared ordering objects making statements of comparison filling, covering or matching. 	Everyday Length How Full? Which Holds More? Filling Fast! Comparing Volume Everyday Mass
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	1.SS.2	Sort 3-D objects and 2-D shapes, using one attribute, and explain the sorting rule.	Same and Different

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Grade 1

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	1.SS.3	Replicate composite 2-D shapes and 3-D objects.	Teacher directed
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	1.SS.4	Compare 2-D shapes to parts of 3-D objects in the environment.	Teacher directed

Grade 2

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	2.N.1	Say the number sequence 0 to 100 by: <ul style="list-style-type: none"> 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5 and 10 respectively 10s, using starting points from 1 to 9 2s, starting from 1. 	Count by Twos Counting by Twos Count by Fives Counting by Fives Count by Tens Counting by Tens Number Line Order Count by 2s, 5s and 10s
Number	Develop number sense	2.N.2	Demonstrate if a number (up to 100) is even or odd.	Odd or Even
Number	Develop number sense	2.N.3	Describe order or relative position, using ordinal numbers (up to tenth).	Teacher directed
Number	Develop number sense	2.N.4	Represent and describe numbers to 100, concretely, pictorially and symbolically.	Matching Numbers to 10 Matching Numbers to 20 Reading Numbers to 30 Ordinal Numbers Everyday Money Arranging Numbers Place Value 1 Making Numbers Count Making Big Numbers Count Repartition Two-digit Numbers
Number	Develop number sense	2.N.5	Compare and order numbers up to 100.	Counting Forward Counting Backward 1 to 30 Going Up Going Down Before, After & Between to 100 Number Lines 1 More, 2 Less 1 More, 10 Less Greater or Less to 100
Number	Develop number sense	2.N.6	Estimate quantities to 100, using referents.	Teacher directed

Grade 2

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	2.N.7	Illustrate, concretely and pictorially, the meaning of place value for numerals to 100.	Place Value 1 Making Numbers Count Making Big Numbers Count
Number	Develop number sense	2.N.8	Demonstrate and explain the effect of adding zero to, or subtracting zero from, any number.	Teacher directed
Number	Develop number sense	2.N.9	<p>Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by:</p> <ul style="list-style-type: none"> • using personal strategies for adding and subtracting with and without the support of manipulatives • creating and solving problems that involve addition and subtraction • using the commutative property of addition (the order in which numbers are added does not affect the sum) • using the associative property of addition (grouping a set of numbers in different ways does not affect the sum) • explaining that the order in which numbers are subtracted may affect the difference. 	All about Ten Fact Families: Add and Subtract Adding to 10 Word Problems Addition Adding in Any Order Commutative Property of Addition Additive Addition Add 3 Numbers Using Bonds to 10 Add 3 Numbers: Bonds to Multiples of 10 Add 3 Single Digit Numbers Adding to 2-digit numbers Mental Addition Subtracting from 20 Simple Subtraction How much Change? Subtract Tens Mental Subtraction Decompose Numbers to Subtract All about Twenty Add and Subtract Problems Related Facts 1 Problems: Addition and Subtraction 10 More, 10 Less Bar Model Problems 1 Bar Model Problems 2
Number	Develop number sense	2.N.10	Apply mental mathematics strategies for basic addition facts and related subtraction facts to 18.	Fact Families: Add and Subtract Subtraction Facts to 18 Doubles and Near Doubles Related Facts 1


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Grade 2


Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	2.PR.1	Demonstrate an understanding of repeating patterns (three to five elements) by: <ul style="list-style-type: none"> describing extending comparing creating patterns using manipulatives, diagrams, sounds and actions. 	Simple Patterns Missing it! Pattern Error
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	2.PR.2	Demonstrate an understanding of increasing patterns by: <ul style="list-style-type: none"> describing reproducing extending creating numerical (numbers to 100) and non-numerical patterns using manipulatives, diagrams, sounds and actions. 	Counting on a 100 grid Skip Counting
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	2.PR.3	Sort a set of objects, using two attributes, and explain the sorting rule.	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	2.PR.4	Demonstrate and explain the meaning of equality and inequality, concretely and pictorially.	Balancing Objects Balancing Act
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	2.PR.5	Record equalities and inequalities symbolically, using the equal symbol or the not equal symbol.	Teacher directed

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Grade 2


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	2.SS.1	Relate the number of days to a week and the number of months to a year in a problem-solving context.	Days of the Week Days: After and Before Weekdays and Weekends Tomorrow and Yesterday (Scaffolded) Tomorrow and Yesterday (without scaffold) Months of the Year Months After and Before
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	2.SS.2	Relate the size of a unit of measure to the number of units (limited to nonstandard units) used to measure length and mass (weight).	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	2.SS.3	Compare and order objects by length, height, distance around and mass (weight), using nonstandard units, and make statements of comparison.	Comparing Length Everyday Mass
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	2.SS.4	Measure length to the nearest nonstandard unit by: <ul style="list-style-type: none"> • using multiple copies of a unit • using a single copy of a unit (iteration process). 	Measuring Length with Blocks Compare Length
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	2.SS.5	Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.	Teacher directed

Grade 2


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	2.SS.6	Sort 2-D shapes and 3-D objects, using two attributes, and explain the sorting rule.	Sort It
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	2.SS.7	Describe, compare and construct 3-D objects, including: <ul style="list-style-type: none"> • cubes • spheres • cones • cylinders • pyramids. 	Match the Solid 1 Relate Shapes and Solids
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	2.SS.8	Describe, compare and construct 2-D shapes, including: <ul style="list-style-type: none"> • triangles • squares • rectangles • circles. 	Collect Simple Shapes
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	2.SS.9	Identify 2-D shapes as parts of 3-D objects in the environment.	Relate Shapes and Solids
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	2.SP.1	Gather and record data about self and others to answer questions.	Teacher directed

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Grade 2


Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	2.SP.2	Construct and interpret concrete graphs and pictographs to solve problems.	Read Graphs Comparing Groups of Objects Picture Graphs: More or Less Picture Graphs: single-unit scale

Grade 3

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	3.N.1	Say the number sequence 0 to 1000 forward and backward by: <ul style="list-style-type: none"> • 5s, 10s or 100s, using any starting point • 3s, using starting points that are multiples of 3 • 4s, using starting points that are multiples of 4 • 25s, using starting points that are multiples of 25. 	Teacher directed
Number	Develop number sense	3.N.2	Represent and describe numbers to 1000, concretely, pictorially and symbolically.	Model Numbers Place Value 2
Number	Develop number sense	3.N.3	Compare and order numbers to 1000.	Ascending Order Descending Order Which is Greater? Which is Less?
Number	Develop number sense	3.N.4	Estimate quantities less than 1000, using referents.	Teacher directed
Number	Develop number sense	3.N.5	Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000.	Model Numbers Place Value 2 Ascending Order Descending Order Which is Greater? Which is Less?
Number	Develop number sense	3.N.6	Describe and apply mental mathematics strategies for adding two 2-digit numerals.	Addition Adding to 2-digit numbers Mental Addition Complements to 10, 20, 50
Number	Develop number sense	3.N.7	Describe and apply mental mathematics strategies for subtracting two 2-digit numerals.	Subtract Tens Mental Subtraction Decompose Numbers to Subtract Subtract Numbers
Number	Develop number sense	3.N.8	Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context.	Teacher directed


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Grade 3


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	3.N.9	<p>Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1-, 2- and 3-digit numerals), concretely, pictorially and symbolically, by:</p> <ul style="list-style-type: none"> • using personal strategies for adding and subtracting with and without the support of manipulatives • creating and solving problems in context that involve addition and subtraction of numbers. 	<p>Add Two 2-Digit Numbers Add Three 2-Digit Numbers Add 3-Digit Numbers Add Two 2-Digit Numbers: Regroup Subtract Numbers: Regroup Column Subtraction</p>
Number	Develop number sense	3.N.10	<p>Apply mental mathematics strategies and number properties in order to understand and recall basic addition facts and related subtraction facts to 18.</p>	<p>Addition Simple Subtraction Fact Families: Add and Subtract Commutative Property of Addition</p>

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Grade 3


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	3.N.11	<p>Demonstrate an understanding of multiplication to 5×5 by:</p> <ul style="list-style-type: none"> representing and explaining multiplication using equal grouping and arrays creating and solving problems in context that involve multiplication modelling multiplication using concrete and visual representations, and recording the process symbolically relating multiplication to repeated addition relating multiplication to division. 	<p>Groups of Two Groups of Five Model Multiplication to 5×5 Multiplication Grids Multiplication Problems 1</p>
Number	Develop number sense	3.N.12	<p>Demonstrate an understanding of division (limited to division related to multiplication facts up to 5×5) by:</p> <ul style="list-style-type: none"> representing and explaining division using equal sharing and equal grouping creating and solving problems in context that involve equal sharing and equal grouping modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically relating division to repeated subtraction relating division to multiplication. 	<p>Share the Treasure Divide Into Equal Groups Dividing by Two Dividing by Five Frog Jump Division Fact Families: Multiply and Divide</p>

Grade 3

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	3.N.13	Demonstrate an understanding of fractions by: <ul style="list-style-type: none"> explaining that a fraction represents a part of a whole describing situations where fractions are used comparing fractions of the same whole that have like denominators. 	Halves Is it Half? Halve and Quarters Thirds and Sixths Shade Fractions Uneven partitioned shapes 1 Compare Fractions 1a
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	3.PR.1	Demonstrate an understanding of increasing patterns by: <ul style="list-style-type: none"> describing extending comparing creating numerical (numbers to 1000) and non-numerical patterns using manipulatives, diagrams, sounds and actions. 	Counting on a 100 grid Count Forward Patterns Increasing patterns
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	3.PR.2	Demonstrate an understanding of decreasing patterns by: <ul style="list-style-type: none"> describing extending comparing creating numerical (numbers to 1000) and non-numerical patterns using manipulatives, diagrams, sounds and actions. 	Decreasing patterns Count Backwards patterns Describing patterns
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	3.PR.3	Sort objects or numbers, using one or more than one attribute.	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	3.PR.4	Solve one-step addition and subtraction equations involving a symbol to represent an unknown number.	Missing Numbers Problems: Add and Subtract

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Grade 3


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	3.SS.1	Relate the passage of time to common activities, using nonstandard and standard units (minutes, hours, days, weeks, months, years).	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	3.SS.2	Relate the number of seconds to a minute, the number of minutes to an hour and the number of days to a month in a problem-solving context.	Days: After and Before Months of the Year Months After and Before
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	3.SS.3	Demonstrate an understanding of measuring length (cm, m) by: <ul style="list-style-type: none"> selecting and justifying referents for the units cm and m modelling and describing the relationship between the units cm and m estimating length, using referents measuring and recording length, width and height. 	How Long is That? Ordering Lengths (cm)
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	3.SS.4	Demonstrate an understanding of measuring mass (g, kg) by: <ul style="list-style-type: none"> selecting and justifying referents for the units g and kg modelling and describing the relationship between the units g and kg estimating mass, using referents measuring and recording mass. 	How Heavy? How Heavy is it? Ordering Mass (g)

Grade 3


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	3.SS.5	Demonstrate an understanding of perimeter of regular and irregular shapes by: <ul style="list-style-type: none"> estimating perimeter, using referents for cm or m measuring and recording perimeter (cm, m) constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter. 	Perimeter of Shapes
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	3.SS.6	Describe 3-D objects according to the shape of the faces and the number of edges and vertices.	How Many Faces? How many Edges? How many Vertices
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	3.SS.7	Sort regular and irregular polygons, including: <ul style="list-style-type: none"> triangles quadrilaterals pentagons hexagons octagons according to the number of sides.	Collect the Polygons
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	3.SP.1	Collect first-hand data and organize it using: <ul style="list-style-type: none"> tally marks line plots charts lists to answer questions.	Tallies Interpreting Tables

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Grade 3


Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	3.SP.2	Construct, label and interpret bar graphs to solve problems.	Bar Graphs 1 Bar Graphs 2

Grade 4


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	4.N.1	Represent and describe whole numbers to 10 000, pictorially and symbolically.	Understanding Place Value 2
Number	Develop number sense	4.N.2	Compare and order numbers to 10 000.	Which Is Greater? Which Is Less? Put in Order 1 Nearest Thousand? Rounding Numbers
Number	Develop number sense	4.N.3	Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by: <ul style="list-style-type: none"> • using personal strategies for adding and subtracting • estimating sums and differences • solving problems involving addition and subtraction. 	Estimate Sums Compensation- Add Add 3-Digit Numbers Add 3-Digit Numbers: Regroup Adding Colossal Columns Magic Symbols 1 Estimate Differences Compensation- Subtract 3-Digit Differences: 1 Regrouping 3-Digit Differences: 2 Regroupings 3-Digit Differences with Zeros Estimation: Add and Subtract Split Add and Subtract Jump Add and Subtract
Number	Develop number sense	4.N.4	Apply the properties of 0 and 1 for multiplication and the property of 1 for division.	Teacher directed

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Grade 4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	4.N.5	Describe and apply mental mathematics strategies to determine basic multiplication facts to 9×9 and related division facts.	Grouping in Threes Grouping in Fours Grouping in Fives Grouping in Sixes Grouping in Sevens Grouping in Eights Grouping in Nines Multiplication Turn-Abouts Dividing Threes Dividing Fours Dividing Fives Dividing Sixes Dividing Sevens Dividing Eights Dividing Nines Related Facts 2 Fact Families: Multiply and Divide
Number	Develop number sense	4.N.6	Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by: <ul style="list-style-type: none"> • using personal strategies for multiplication with and without concrete materials • using arrays to represent multiplication • connecting concrete representations to symbolic representations • estimating products • applying the distributive property. 	Mental Methods Multiplication 1 Multiply 3 single-digit numbers Multiply: 2-Digit by 1-Digit Multiply: 1-Digit Number, Regroup Remainders by Arrays Multiplication Problems 1 Bar Model $x \div$

Grade 4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	4.N.7	Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: <ul style="list-style-type: none"> • using personal strategies for dividing with and without concrete materials • estimating quotients • relating division to multiplication. 	Dividing Threes Dividing Fours Dividing Fives Dividing Sixes Dividing Sevens Dividing Eights Dividing Nines Remainders by Arrays
Number	Develop number sense	4.N.8	Demonstrate an understanding of fractions less than or equal to one by using concrete, pictorial and symbolic representations to: <ul style="list-style-type: none"> • name and record fractions for the parts of a whole or a set • compare and order fractions • model and explain that for different wholes, two identical fractions may not represent the same quantity • provide examples of where fractions are used. 	Compare Fractions 1a Fractions of a Collection 1 Fractions of a Collection 2 Fractions Fruit Sets 1 Uneven partitioned shapes 2 Partition into Equal Parts
Number	Develop number sense	4.N.9	Represent and describe decimals (tenths and hundredths), concretely, pictorially and symbolically.	Decimal Place Value Decimals from Words to Digits 1 Decimals on the Number Line Comparing Decimals 1 Comparing Decimals
Number	Develop number sense	4.N.10	Relate decimals to fractions and fractions to decimals (to hundredths).	Teacher directed


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Grade 4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	4.N.11	Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by: <ul style="list-style-type: none"> • using personal strategies to determine sums and differences • estimating sums and differences • using mental mathematics strategies to solve problems. 	Decimal Complements Subtract Decimals 1
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	4.PR.1	Identify and describe patterns found in tables and charts.	Table of Values
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	4.PR.2	Translate among different representations of a pattern, such as a table, a chart or concrete materials.	Teacher directed
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	4.PR.3	Represent, describe and extend patterns and relationships, using charts and tables, to solve problems.	Pick the Next Number Describing Patterns Table of Values Composing Additions to 20
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	4.PR.4	Identify and explain mathematical relationships, using charts and diagrams, to solve problems.	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	4.PR.5	Express a given problem as an equation in which a symbol is used to represent an unknown number.	Problems: multiply and divide Words problems with letters
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	4.PR.6	Solve one-step equations involving a symbol to represent an unknown number.	Composing Additions to 20 Find the Missing Number 1 Problems: Multiply and Divide Words Problems with letters


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Grade 4

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	4.SS.1	Read and record time, using digital and analog clocks, including 24-hour clocks.	Quarter To and Quarter Past Five Minute Times What is the Time?
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	4.SS.2	Read and record calendar dates in a variety of formats.	24 Hour Time Calendar: Days and Dates
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	4.SS.3	Demonstrate an understanding of area of regular and irregular 2-D shapes by: <ul style="list-style-type: none"> recognizing that area is measured in square units selecting and justifying referents for the units cm^2 or m^2 estimating area using referents for the units cm^2 or m^2 determining and recording area (cm^2 or m^2) constructing different rectangles for a given area (cm^2 or m^2) in order to demonstrate that many different rectangles may have the same area. 	Bigger or Smaller Shape Equal Areas Area of Shapes
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	4.SS.4	Describe and construct right rectangular and right triangular prisms.	What Prism am I? How Many Faces? Faces, Edges and Vertices


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Grade 4


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	4.SS.5	Demonstrate an understanding of congruency, concretely and pictorially.	Congruent Figures (Grid)
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	4.SS.6	Demonstrate an understanding of line symmetry by: <ul style="list-style-type: none"> identifying symmetrical 2-D shapes creating symmetrical 2-D shapes drawing one or more lines of symmetry in a 2-D shape. 	Symmetry Lines of Symmetry
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	4.SP.1	Demonstrate an understanding of many-to-one correspondence.	Bar Graphs 2 Making Picture Graphs: With Scale Picture Graphs: with scale & half symbols
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	4.SP.2	Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions.	Bar Graphs 2 Making Picture Graphs: With Scale Picture Graphs: with scale & half symbols

Alberta Mathematics Program of Studies

Grade 5


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	5.N.1	Represent and describe whole numbers to 1 000 000.	Expanded Notation Place Value - Millions Numbers from Words to Digits 1
Number	Develop number sense	5.N.2	Use estimation strategies in problem-solving contexts.	Estimate Sums Estimate Differences Estimation: Add and Subtract Compensation - Add Compensation - Subtract Rounding Numbers Complements to 50 and 100 Mental Methods Multiplication 1 Mental Methods Multiplication 2 Mental Methods Division Estimate Quotients
Number	Develop number sense	5.N.3	Apply mental mathematics strategies and number properties in order to understand and recall basic multiplication facts (multiplication tables) to 81 and related division facts.	Multiplication Facts Times Tables Fact Families: Multiply and Divide Missing Numbers: \times and \div facts Multiplication Properties
Number	Develop number sense	5.N.4	Apply mental mathematics strategies for multiplication.	Grid Methods 2 Multiply 2 Digits Area Model Problems: Multiply and Divide Equivalent Facts: Multiply Multiplying Whole Numbers by 10, 100, and 100 Mental Methods Multiplication 1 Mental Methods Multiplication 2 Double and Halve to Multiply Multiply: 2-Digit by 1-Digit Contracted Multiplication Multiply: 2-Digit Number, Regroup

Grade 5


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	5.N.5	Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems.	Multiply 2 Digits Area Model Contracted Multiplication Multiply: 2-Digit Number, Regroup
Number	Develop number sense	5.N.6	Demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit), and interpret remainders to solve problems.	Remainders by Arrays Remainders by Tables Mental Methods Division Estimate Quotients
Number	Develop number sense	5.N.7	Demonstrate an understanding of fractions by using concrete, pictorial and symbolic representations to: <ul style="list-style-type: none"> create sets of equivalent fractions compare fractions with like and unlike denominators. 	Equivalent Fractions on a Number Line 1 Equivalent Fractions on a Number Line 2 Equivalent Fraction Wall 1 Equivalent Fraction Wall 2 The Equivalent Fraction Ordering Fractions 1 Compare Fractions 1b Compare Fractions 2
Number	Develop number sense	5.N.8	Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially and symbolically.	Decimals on a Number Line Decimals from Words to Digits 2
Number	Develop number sense	5.N.9	Relate decimals to fractions and fractions to decimals (to thousandths).	Decimals to Fractions 1 Fractions to Decimals
Number	Develop number sense	5.N.10	Compare and order decimals (to thousandths) by using: <ul style="list-style-type: none"> benchmarks place value equivalent decimals. 	Nearest Whole Number Comparing Decimals Decimal Order 2 Rounding Decimals 1
Number	Develop number sense	5.N.11	Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths).	Decimal Complements Estimate Decimal Sums 2 Estimate Decimal Differences 2 Add Decimals 1 Add Decimals 2 Subtract Decimals 1 Subtract Decimals 2 Adding and Subtracting Decimals

Alberta Mathematics Program of Studies

Grade 5

Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	5.PR.1	Determine the pattern rule to make predictions about subsequent elements.	Describing Patterns Pick the Next Number Table of Values
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	5.PR.2	Express a given problem as an equation in which a letter variable is used to represent an unknown number (limited to whole numbers).	Missing Values Missing Numbers: Variables Find the Missing Number 2
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	5.PR.3	Solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions.	Solve Equations: Add, Subtract 1 Solve equations: Multiply, Divide 1
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	5.SS.1	Identify 90° angles.	Right Angle Relation
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	5.SS.2	Design and construct different rectangles, given either perimeter or area, or both (whole numbers), and make generalizations.	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	5.SS.3	Demonstrate an understanding of measuring length (mm) by: <ul style="list-style-type: none"> selecting and justifying referents for the unit mm modelling and describing the relationship between mm and cm units, and between mm and m units. 	Converting cm and mm Converting Units of Length

Grade 5

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	5.SS.4	Demonstrate an understanding of volume by: <ul style="list-style-type: none"> • selecting and justifying referents for cm^3 or m^3 units • estimating volume, using referents for cm^3 or m^3 • measuring and recording volume (cm^3 or m^3) • constructing right rectangular prisms for a given volume. 	How many Blocks? Volume of Solids and Prisms – 1cm^3 blocks Volume of Rectangular Prisms 1
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	5.SS.5	Demonstrate an understanding of capacity by: <ul style="list-style-type: none"> • describing the relationship between mL and L • selecting and justifying referents for mL or L units • estimating capacity, using referents for mL or L • measuring and recording capacity (mL or L). 	Using a Litre Litre Conversions Millilitres and Litres
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	5.SS.6	Describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes that are: <ul style="list-style-type: none"> • parallel • intersecting • perpendicular • vertical • horizontal. 	What Line am I? What Pair of Lines Am I? Faces, Edges and Vertices of 3D Shapes


Alberta Mathematics Program of Studies

Grade 5

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	5.SS.7	Identify and sort quadrilaterals, including: <ul style="list-style-type: none"> rectangles squares trapezoids parallelograms rhombuses according to their attributes.	Properties of Quadrilaterals
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	5.SS.8	Identify and describe a single transformation, including a translation, rotation and reflection of 2-D shapes.	Transformations Rotational Symmetry of Shapes
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	5.SS.9	Perform, concretely, a single transformation (translation, rotation or reflection) of a 2-D shape, and draw the image.	Teacher directed
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	5.SP.1	Differentiate between first-hand and second-hand data.	Teacher directed
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	5.SP.2	Construct and interpret double bar graphs to draw conclusions.	Teacher directed
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	5.SP.3	Describe the likelihood of a single outcome occurring, using words such as: <ul style="list-style-type: none"> impossible possible certain. 	Probability Scale What are the Chances?

Alberta Mathematics Program of Studies

Grade 5

Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	5.SP.4	<p>Compare the likelihood of two possible outcomes occurring, using words such as:</p> <ul style="list-style-type: none"> • less likely • equally likely • more likely. 	Teacher directed

Alberta Mathematics Program of Studies

Grade 6

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	6.N.1	Demonstrate an understanding of place value, including numbers that are: <ul style="list-style-type: none"> greater than one million less than one thousandth. 	Place Value to Millions Place Value to Billions Numbers from Words to Digits 2 Numbers from Words to Digits 3 Comparing Decimals Decimals from Words to Digits 2 Decimal Order 2 Rounding Decimals
Number	Develop number sense	6.N.2	Solve problems involving whole numbers and decimal numbers.	Jump Add and Subtract Split Add and Subtract Compensation- Add Compensation- Subtract Bump Add and Subtract Magic Symbols 2 Add 3-Digit Numbers: Regroup 3-Digit Differences: 2 Regroupings 3-Digit Differences with Zeros Add Decimals 1 Add Decimals 2 Subtract Decimals 1 Subtract Decimals 2 Multiply More Multiples of 10 Mental Methods Multiplication 2 Grid Methods 2 Grid Methods 3 Estimate Products Contracted Multiplication Multiply: 2-Digit Number, Regroup Dividing Whole Numbers by 10, 100, 1000 Mental Methods Division 2 Mental Methods Division 3 Short Division


Alberta Mathematics Program of Studies

Grade 6


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	6.N.3	Demonstrate an understanding of factors and multiples by: <ul style="list-style-type: none"> determining multiples and factors of numbers less than 100 identifying prime and composite numbers solving problems using multiples and factors. 	Multiples Factors Find the Factor Fit the Conditions 1 Greatest Common Factor Least Common Multiple Prime or Composite?
Number	Develop number sense	6.N.4	Relate improper fractions to mixed numbers and mixed numbers to improper fractions.	Identifying Fractions Beyond 1 Mixed to Improper Improper to Mixed Mixed and Improper Fractions on a Number Line
Number	Develop number sense	6.N.5	Demonstrate an understanding of ratio, concretely, pictorially and symbolically.	Simplify Ratios: 2 Whole Numbers Ratio Word Problems
Number	Develop number sense	6.N.6	Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially and symbolically.	Modelling Percentages Percents to Fractions Percentages to Fractions (with and without simplification) Match Decimals and Percentages Calculating Percentages (Mental)
Number	Develop number sense	6.N.7	Demonstrate an understanding of integers, concretely, pictorially and symbolically.	Integers on a Number Line Ordering Integers (Number Line) Comparing Integers Add Integers
Number	Develop number sense	6.N.8	Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors).	Mental Methods Multiplication 3 Multiply Decimals: 10, 100, 1000 Divide Decimals: 10, 100, 1000 Multiply Decimal by Whole Number Decimal by Whole Number

Alberta Mathematics Program of Studies

Grade 6


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	6.N.9	Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).	Order of Operations 1 (BEDMAS) Integers: Order of Operations (BEDMAS)
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	6.PR.1	Represent and describe patterns and relationships, using graphs and tables.	Graphing from a Table of Values Table of Values Function Rules and Tables Pattern Rules and Tables Find the Pattern Rule
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	6.PR.2	Demonstrate an understanding of the relationships within tables of values to solve problems.	Table of Values Function Rules and Tables Pattern Rules and Tables Find the Pattern Rule
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	6.PR.3	Represent generalizations arising from number relationships, using equations with letter variables.	Find the Pattern Rule
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	6.PR.4	Express a given problem as an equation in which a letter variable is used to represent an unknown number.	Writing Algebraic Expressions Writing Equations Write an Equation: Word Problems
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	6.PR.5	Demonstrate and explain the meaning of preservation of equality, concretely and pictorially.	Solve Equations: Add, Subtract 1 Solve Equations: Multiply, Divide 1

Grade 6

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	6.SS.1	Demonstrate an understanding of angles by: <ul style="list-style-type: none"> identifying examples of angles in the environment classifying angles according to their measure estimating the measure of angles, using 45°, 90° and 180° as reference angles determining angle measures in degrees drawing and labelling angles when the measure is specified. 	Right Angle Relation What Type of Angle? Classifying Angles Measuring Angles Estimating Angles Labelling Angles
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	6.SS.2	Demonstrate that the sum of interior angles is: <ul style="list-style-type: none"> 180° in a triangle 360° in a quadrilateral. 	Angle Measures in a Triangle
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	6.SS.3	Develop and apply a formula for determining the: <ul style="list-style-type: none"> perimeter of polygons area of rectangles volume of right rectangular prisms. 	Perimeter: Squares and Rectangles Perimeter: Triangles 2 Calculate Area of Squares and Rectangles Volume of Rectangular Prisms 1
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them	6.SS.4	Construct and compare triangles, including: <ul style="list-style-type: none"> scalene isosceles equilateral right obtuse acute in different orientations.	Triangles: Acute, Right, Obtuse Triangle Tasters Triangle- Tasters


Alberta Mathematics Program of Studies

Grade 6


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them	6.SS.5	Describe and compare the sides and angles of regular and irregular polygons.	Sides, Angles and Diagonals
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	6.SS.6	Perform a combination of translations, rotations and/ or reflections on a single 2-D shape, with and without technology, and draw and describe the image.	Transformations Rotational Symmetry
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	6.SS.7	Perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations.	Teacher directed
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	6.SS.8	Identify and plot points in the first quadrant of a Cartesian plane, using whole number ordered pairs.	Coordinate Graphs: 1st Quadrant
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	6.SS.9	Perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices).	Vertical and horizontal shift Transformations: Coordinate Plane Rotations: Coordinate Plane
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	6.SP.1	Create, label and interpret line graphs to draw conclusions.	Line Graphs: Reading
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	6.SP.2	Select, justify and use appropriate methods of collecting data, including: <ul style="list-style-type: none"> questionnaires experiments databases electronic media. 	Teacher directed

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Grade 6

Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	6.SP.3	Graph collected data, and analyze the graph to solve problems.	Bar Graphs 2 Divided Bar Graphs Circle Graphs
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	6.SP.4	<p>Demonstrate an understanding of probability by:</p> <ul style="list-style-type: none"> identifying all possible outcomes of a probability experiment differentiating between experimental and theoretical probability determining the theoretical probability of outcomes in a probability experiment determining the experimental probability of outcomes in a probability experiment comparing experimental results with the theoretical probability for an experiment. 	Find the Probability Introductory Probability

Grade 7


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	7.N.1	Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9 or 10, and why a number cannot be divided by 0.	Divisibility Tests (2, 5, 10) Divisibility Tests (3, 4, 9) Divisibility Tests
Number	Develop number sense	7.N.2	Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals to solve problems (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected).	Decimals on a Number Line Comparing Decimals Adding Decimals Subtract Decimals 2 Adding and Subtracting Decimals Decimal Complements Multiply Decimals: 10, 100, 1000 Divide Decimals: 10, 100, 1000 Decimal by Whole Number Decimal by Decimal Divide Decimal by Whole Number Divide Decimal by Decimal Estimate Decimal Sums 1 Estimate Decimal Differences 1
Number	Develop number sense	7.N.3	Solve problems involving percents from 1% to 100%.	Calculating Percentages (Mental) Percentage of an amount using fractions (<100%) Quantities to Percentages (no units) Quantities to Percentages (with units) What Percentage? Calculating Percentages 1
Number	Develop number sense	7.N.4	Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions.	Decimals to Fractions 1 Decimals to Fractions 2 Fractions to Decimals 2 Fraction to Terminating Decimal

Grade 7

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	7.N.5	Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially and symbolically (limited to positive sums and differences).	Add: Common Denominator Add: No Common Denominator Add Like Mixed Numbers Add Unlike Mixed Numbers Subtract: No Common Denominators One Take Fraction Subtract Like Mixed Numbers Subtract Like Fractions Mixed Numbers Add Mixed Numbers: Same Sign Subtract Mixed Numbers: Signs Differ
Number	Develop number sense	7.N.6	Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.	Integers on a Number Line Ordering Integers (Number Line) Comparing Integers Negative or Positive? Integers: Add and Subtract More with Integers Add Integers Integers: Subtraction Adding Integers: Positive, Negative or Zero
Number	Develop number sense	7.N.7	Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: <ul style="list-style-type: none"> • benchmarks • place value • equivalent fractions and/or decimals. 	Identifying Fractions on a Number Line Decimals to Fractions 1 Decimals to Fractions 2 Fractions to Decimals 2
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	7.PR.1	Demonstrate an understanding of oral and written patterns and their equivalent linear relations.	Increasing Patterns Decreasing Patterns Pick the Next Number

Alberta Mathematics Program of Studies


Grade 7

Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	7.PR.2	Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.	Table of Values Pattern Rules and Tables Find the Pattern Rule
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	7.PR.3	Demonstrate an understanding of preservation of equality by: <ul style="list-style-type: none"> modelling preservation of equality, concretely, pictorially and symbolically applying preservation of equality to solve equations. 	Find the Missing Number 1 Missing Numbers: Variables
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	7.PR.4	Explain the difference between an expression and an equation.	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	7.PR.5	Evaluate an expression, given the value of the variable(s).	Writing Algebraic Expressions Simple Substitution Simple Substitution 2 Simple Substitution 3 Complex Substitution Recognizing Like Terms Like Terms: Add, Subtract Like Terms: Add and Subtract
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	7.PR.6	Model and solve, concretely, pictorially and symbolically, problems that can be represented by one-step linear equations of the form $x + a = b$ where a and b are integers.	Solve Equations: Add, Subtract 1 Solve Equations: Multiply, Divide 1 Solving Simple Equations

Grade 7


Strand	Substrand	Outcome	Outcome Description	Activities
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	7.PR.7	Model and solve, concretely, pictorially and symbolically, problems that can be represented by linear equations of the form: <ul style="list-style-type: none"> $ax + b = c$ $ax = b$ $\frac{x}{a} = b, a \neq 0$ where a, b and c are whole numbers.	Solve Equations: Add, Subtract 1 Solve Equations: Multiply, Divide 1 Solving Simple Equations
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	7.SS.1	Demonstrate an understanding of circles by: <ul style="list-style-type: none"> describing the relationships among radius, diameter and circumference relating circumference to pi determining the sum of the central angles constructing circles with a given radius or diameter solving problems involving the radii, diameters and circumferences of circles. 	Labelling Circles Arc Length Perimeter and Circles Calculate Circumference of Circles
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	7.SS.2	Develop and apply a formula for determining the area of: <ul style="list-style-type: none"> triangles parallelograms circles. 	Area: Squares and Rectangles Area: Triangles Area: Composite Shapes Area: Parallelograms (Metric) Area: Circles 1

Grade 7

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Objects)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	7.SS.3	Perform geometric constructions, including: <ul style="list-style-type: none"> perpendicular line segments parallel line segments perpendicular bisectors angle bisectors. 	Teacher directed
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	7.SS.4	Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.	Coordinate Graphs: 1 st Quadrant Number Plane Coordinate Graphs Graphing from a Table of Values Reading Values from a Line What Line am I?
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	7.SS.5	Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices).	Symmetry or Not? Rotational Symmetry Transformations Horizontal and Vertical Change Transformations: Coordinate Plane Rotations: Coordinate Plane
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	7.SP.1	Demonstrate an understanding of central tendency and range by: <ul style="list-style-type: none"> determining the measures of central tendency (mean, median, mode) and range determining the most appropriate measures of central tendency to report findings. 	Mode Mean Median Data Extremes and Range Which Measure of Central Tendency?
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	7.SP.2	Determine the effect on the mean, median and mode when an outlier is included in a data set.	Teacher directed


Alberta Mathematics Program of Studies

Grade 7

Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	7.SP.3	Construct, label and interpret circle graphs to solve problems.	Sector Graphs Creating a Sector Graph
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	7.SP.4	Express probabilities as ratios, fractions and percents.	What are the Chances? Find the Probability Simple Probability Fair Games Relative Frequency
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	7.SP.5	Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.	What are the Chances? Find the Probability Simple Probability Fair Games Relative Frequency
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	7.SP.6	Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or other graphic organizer) and experimental probability of two independent events.	Find the Probability Simple Probability Fair Games Tree Diagram


Alberta Mathematics Program of Studies

Grade 8

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	8.N.1	Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers).	Square Roots Square Roots 1
Number	Develop number sense	8.N.2	Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).	Estimating Square Roots
Number	Develop number sense	8.N.3	Demonstrate an understanding of percents greater than or equal to 0%, including greater than 100%.	Decimals to Fractions 1 Fractions to Decimals 2 Fraction to Terminating Decimal Percentages to Fractions (with and without simplification) Percentages greater than 100% to Mixed Numerals Percentages to Decimals Common Fractions as Percentages Fractions to Percentages (Non-Calculator) Fractions to Percentages (Calculator) Mixed Numerals to Percentages greater than 100% Decimals to Percentages Decimal to Percentage Mixed decimal, percentage and fraction conversions Match Decimals and Percentages Percentage of a Quantity Percentage Change: Increase and Decrease Solve Percent Equations Percentage Word Problems

Alberta Mathematics Program of Studies

Grade 8

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	8.N.4	Demonstrate an understanding of ratio and rate.	Simplify Ratios: 2 Whole Numbers Simplify Ratios: 3 Whole Numbers Simplify Ratios: Decimals Simplify Ratios: Fractions Simplify Ratios: Mixed Numbers Equivalent Ratios Ratio
Number	Develop number sense	8.N.5	Solve problems that involve rates, ratios and proportional reasoning.	Dividing a Quantity into a Ratio Ratio Word Problems Word Problems: Ratio Best Buy Unitary Method Rates Word Problems Rates Calculations Distance Travelled Average Speed Time Taken Travel Graphs
Number	Develop number sense	8.N.6	Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically.	Fractions of a Collection Unit Fractions Fractions of an Amount Multiply Fraction by Whole Number Multiply Fraction by Fraction Multiply Two Fractions 1 Multiplying Fractions Multiply Mixed Numbers More Fraction Problems Using Reciprocals Divide by a Unit Fraction Divide Whole Number by Fraction Divide Fractions Visual Model Divide fractions by Fractions 1 Dividing Fractions Divide Mixed Numbers Operations with Fractions Divide Mixed Numbers with Signs


Alberta Mathematics Program of Studies

Grade 8

Strand	Substrand	Outcome	Outcome Description	Activities
Number	Develop number sense	8.N.7	Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically.	Multiplication Facts Multiply 2 Digits Area Model Division Facts 1 Dividing by 10, 100, 1000 Integers: Multiplication and Division Integers: Multiply and Divide Multiplying and Dividing Integers Integers: Order of Operations (BEDMAS)
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	8.PR.1	Graph and analyze two-variable linear relations.	Graphing from a Table of Values 2
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	8.PR.2	Model and solve problems concretely, pictorially and symbolically, using linear equations of the form: <ul style="list-style-type: none"> $ax = b$ $\frac{x}{a} = b, a \neq 0$ $ax + b = c$ $\frac{x}{a} + b = c, a \neq 0$ $a(x + b) = c$ where a, b and c are integers.	Using the Distributive Property Solving Simple Equations Equations with Fractions Solve Two-Step Equations Solving More Equations Equations with Grouping Symbols Checking Solutions Find the Mistake Equations to Solve Problems
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	8.SS.1	Develop and apply the Pythagorean theorem to solve problems.	Hypotenuse of a Right Triangle Pythagoras: Find a Short Side (integers only) Pythagoras: Find a Short Side (rounding needed) Pythagoras: Find a Short Side (decimal values) Pythagorean Theorem Pythagorean Triads Pythagoras and Perimeter Cone and Pyramid Dimensions
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	8.SS.2	Draw and construct nets for 3-D objects.	Nets


Alberta Mathematics Program of Studies

Grade 8

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	8.SS.3	Determine the surface area of: <ul style="list-style-type: none"> right rectangular prisms right triangular prisms right cylinders to solve problems. 	Surface Area: Rectangular Prisms Surface Area: Rectangular Prisms 1 Surface Area: Triangular Prisms
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	8.SS.4	Develop and apply formulas for determining the volume of right rectangular prisms, right triangular prisms and right cylinders.	Volume: Rectangular Prism 1 Volume: Rectangular Prism 2 Volume of Triangular Prisms
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	8.SS.5	Draw and interpret top, front and side views of 3-D objects composed of right rectangular prisms.	Symmetry or Not? Rotational Symmetry Transformations Horizontal and Vertical Change Transformations: Coordinate Plane Rotations: Coordinate Plane
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	8.SS.6	Demonstrate an understanding of the congruence of polygons.	Congruent Figures (Dot Grid) Congruent Figures: Find Values
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	8.SP.1	Critique ways in which data is presented in circle graphs, line graphs, bar graphs and pictographs.	Reading from a Column Graph What are the Chances? Line Graphs: Interpretation
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	8.SP.2	Solve problems involving the probability of independent events.	Find the Probability Simple Probability Fair Games Relative Frequency


Alberta Mathematics Program of Studies

Grade 9

Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	9.N.1	<p>Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by:</p> <ul style="list-style-type: none"> representing repeated multiplication, using powers using patterns to show that a power with an exponent of zero is equal to one solving problems involving powers. 	Exponent Notation Exponents
Number	Develop number sense	9.N.2	<p>Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents:</p> <ul style="list-style-type: none"> $(a^m)(a^n) = a^{m+n}$ $a^m \div a^n = a^{m-n}, m > n$ $(a^m)^n = a^{mn}$ $(ab)^m = a^m b^m$ $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}, b \neq 0$ 	Simplifying with Exponent Laws 1 Properties of Exponents The Zero Exponent Exponent Notation and Algebra Zero Exponent and Algebra

Alberta Mathematics Program of Studies

Grade 9


Strand	Substrand	Outcome	Outcome Description	 Activities
Number	Develop number sense	9.N.3	<p>Demonstrate an understanding of rational numbers by:</p> <ul style="list-style-type: none"> comparing and ordering rational numbers solving problems that involve arithmetic operations on rational numbers. 	<p>Add Mixed Numbers: Same Sign Subtract Mixed Numbers: Signs Differ Integers: Multiplication and Division Multiplying and Dividing Integers Multiply Two Fractions 1 Multiply Mixed Numbers Dividing Fractions Divide Mixed Numbers Ordering Integers (Number Line) Ordering Fractions 1 Money Problems: Four Operations Add Mixed Numbers: Signs Can Differ Add Unlike Mixed Numbers Mixed Numerals Divide Mixed Numbers with Signs Add Decimals: Different signs Comparing Decimals 2 Divide Decimal by Whole Number Divide Decimals Fraction Word Problems More Fraction Problems</p>
Number	Develop number sense	9.N.4	Explain and apply the order of operations, including exponents, with and without technology.	<p>Order of Operations 2 (PEMDAS) Integers: Operations Order</p>
Number	Develop number sense	9.N.5	Determine the square root of positive rational numbers that are perfect squares.	<p>Square Roots 1 Square Roots</p>
Number	Develop number sense	9.N.6	Determine an approximate square root of positive rational numbers that are non-perfect squares.	<p>Estimate Square Roots</p>

Grade 9

Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	9.PR.1	Generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution.	Find the Pattern Rule Pattern Rules and Tables Table of Values
Patterns and Relations (Patterns)	Use patterns to describe the world and to solve problems	9.PR.2	Graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.	Conversion Graphs Modelling Linear Relationships Table Of Values Graphing from a Table of Values Graphing from a Table of Values 2 Determining a Rule for a Line
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	9.PR.3	Model and solve problems, using linear equations of the form: <ul style="list-style-type: none"> $ax = b$ $\frac{x}{a} = b, a \neq 0$ $ax + b = c$ $\frac{x}{a} + b = c, a \neq 0$ $ax = b + cx$ $a(x + b) = c$ $ax + b = cx + d$ $a(bx + c) = d(ex + f)$ $\frac{a}{x} = b, x \neq 0$ where a, b, c, d, e and f are rational numbers.	Solving More Equations Equations with Grouping Symbols Checking Solutions Find the Mistake Equations: Variables, Both Sides Solve Multi-Step Equations Writing Equations Solve Equations: Add, Subtract 1 Solve Equations: Add, Subtract 2 Solve Equations: Multiply, Divide 1 Solve Equations: Multiply, Divide 2 Equations to Solve Problems
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	9.PR.4	Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.	Solve One-Step Inequalities 1 Solve One-Step Inequalities 2 Graphing Inequalities on Number Line Graphing Inequalities 2 Graphing Inequalities 3 Solving inequalities 1 Solving Inequalities 2 Solving Inequalities 3


Alberta Mathematics Program of Studies

Grade 9

Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	9.PR.5	Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2).	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	9.PR.6	Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2).	Teacher directed
Patterns and Relations (Variables and Equations)	Represent algebraic expressions in multiple ways	9.PR.7	Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.	Teacher directed
Shape and Space (Measurement)	Use direct and indirect measurement to solve problems	9.SS.1	<p>Solve problems and justify the solution strategy, using the following circle properties:</p> <ul style="list-style-type: none"> the perpendicular from the centre of a circle to a chord bisects the chord the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc the inscribed angles subtended by the same arc are congruent a tangent to a circle is perpendicular to the radius at the point of tangency. 	Teacher directed


Alberta Mathematics Program of Studies

Grade 9

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	9.SS.2	Determine the surface area of composite 3-D objects to solve problems.	Nets Surface Area: Cylinders Surface Area: Triangular Prisms Surface Area: Rectangular Prisms
Shape and Space (3-D Objects and 2-D Shapes)	Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them	9.SS.3	Demonstrate an understanding of similarity of polygons.	Similar Figures 1 Similar Figures Using Similar Triangles Similar Triangles Similarity Proofs
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	9.SS.4	Draw and interpret scale diagrams of 2-D shapes.	Using Similar Triangles Similar Triangles Scale Factor
Shape and Space (Transformations)	Describe and analyze position and motion of objects and shapes	9.SS.5	Demonstrate an understanding of line and rotation symmetry.	Symmetry or Not? Rotational Symmetry Lines of Symmetry Rotational Symmetry of Shapes Symmetry
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	9.SP.1	Describe the effect of: <ul style="list-style-type: none"> • bias • use of language • ethics • cost • time and timing • privacy • cultural sensitivity on the collection of data. 	Teacher directed
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	9.SP.2	Select and defend the choice of using either a population or a sample of a population to answer a question.	Teacher directed


Alberta Mathematics Program of Studies

Grade 9

Strand	Substrand	Outcome	Outcome Description	 Activities
Statistics and Probability (Data Analysis)	Collect, display and analyze data to solve problems	9.SP.3	<p>Develop and implement a project plan for the collection, display and analysis of data by:</p> <ul style="list-style-type: none"> • formulating a question for investigation • choosing a data collection method that includes social considerations • selecting a population or a sample • collecting the data • displaying the collected data in an appropriate manner • drawing conclusions to answer the question. 	Teacher directed
Statistics and Probability (Chance and Uncertainty)	Use experimental or theoretical probabilities to represent and solve problems involving uncertainty	9.SP.4	Demonstrate an understanding of the role of probability in society.	<p>Simple Probability Fair Games Relative Frequency Probability - 'And' and 'Or' Dice and Coins Probability With Replacement Probability Without Replacement Find the Probability</p>

Alberta Mathematics Program of Studies

Grade 10C

Strand	Substrand	Outcome	Outcome Description	 Activities
Measurement	Develop spatial sense and proportional reasoning	10C.M.1	Solve problems that involve linear measurement, using: <ul style="list-style-type: none"> • SI and imperial units of measure • estimation strategies • measurement strategies. 	Customary Units of Length Operations with Length
Measurement	Develop spatial sense and proportional reasoning	10C.M.2	Apply proportional reasoning to problems that involve conversions between SI and imperial units.	Nautical Mile, Kilometre, Knot Converting Units of Length
Measurement	Develop spatial sense and proportional reasoning	10C.M.3	Solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects, including: <ul style="list-style-type: none"> • right cones • right cylinders • right prisms • right pyramids • spheres. 	Operations with Length Converting Units of Length Surface Area: Rearrange Formula Surface Area: Rectangular Prism Surface Area: Triangular Prisms Surface Area: Square Pyramids Surface Area: Cones Surface Area: Cylinders Surface Area: Cuboids Surface Area: Spheres Volume: Prisms Volume: Rectangular Prisms 1 Volume: Rectangular Prisms 2 Volume: Composite Figures Volume: Cones Volume: Spheres Volume: Triangular Prisms Volume: Pyramids Volume: Cylinders Volume: Rearrange Formula

Alberta Mathematics Program of Studies

Grade 10C

Strand	Substrand	Outcome	Outcome Description	Activities
Measurement	Develop spatial sense and proportional reasoning	10C.M.4	Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.	Sin A Cos A Tan A Hypotenuse, Adjacent, Opposite Find Unknown Angles Find Unknown Sides Angle Sum of Triangle Trigonometry Problems 2 Pythagorean Theorem Elevation and Depression
Algebra and Number	Develop algebraic reasoning and number sense	10C.AN.1	Demonstrate an understanding of factors of whole numbers by determining the: <ul style="list-style-type: none"> • prime factors • greatest common factor • least common multiple • square root • cube root. 	Factors Prime Factorization: Exponents Product of Prime Factors Prime or Composite? Greatest Common Factor Least Common Multiple Estimating Square Roots Estimating Cube Roots Square Roots
Algebra and Number	Develop algebraic reasoning and number sense	10C.AN.2	Demonstrate an understanding of irrational numbers by: <ul style="list-style-type: none"> • representing, identifying and simplifying irrational numbers • ordering irrational numbers. 	Irrational Numbers Simplifying Irrational Numbers Adding and Subtracting Irrational Numbers Multiplying Irrational Numbers Expanding Irrational Number Expressions Irrational Number to Exponent Form Dividing Irrational Numbers Expanding Binomial Irrational Numbers

Alberta Mathematics Program of Studies

Grade 10C

Strand	Substrand	Outcome	Outcome Description	 Activities
Algebra and Number	Develop algebraic reasoning and number sense	10C.AN.3	Demonstrate an understanding of powers with integral and rational exponents.	Negative Exponents Exponent Notation Multiplication with Exponents Exponent Form to Numbers Simplifying with Exponent Laws 1 The Zero Exponent Irrational Number to Exponent Form Integer Exponents Exponent Notation and Algebra Properties of Exponents Fractional Exponents
Algebra and Number	Develop algebraic reasoning and number sense	10C.AN.4	Demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials and trinomials) concretely, pictorially and symbolically.	Algebraic Multiplication Dividing Expressions Expanding with Negatives Expanding Brackets Using the Distributive Property Expand then Simplify Recognising Like Terms Special Binomial Products Like Terms: Add and Subtract Expanding Binomial Products Like Terms: Add, Subtract Algebraic Fractions 1 Algebraic Fractions 2 Algebraic Fractions 3
Algebra and Number	Develop algebraic reasoning and number sense	10C.AN.5	Demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially and symbolically.	Factoring Expressions Highest Common Algebraic Factor Factoring with Negatives Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs Factoring with Exponents

Grade 10C


Strand	Substrand	Outcome	Outcome Description	Activities
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.1	Interpret and explain the relationship among data graphs and situations.	Line Graphs: Interpretation Graphing from a Table of Values
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.2	Demonstrate an understanding of relations and functions.	Function Rules and Tables Find the Function Rule
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.3	Demonstrate an understanding of slope with respect to: <ul style="list-style-type: none"> • rise and run • line segments and lines • rate of change • parallel lines • perpendicular lines. 	Gradient Gradients for Real $y=ax$ Slope of a Line Which Straight Line? Are they Parallel? Are they Perpendicular? Horizontal and Vertical Lines Equation from Point and Gradient Equation from Two Point
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.4	Describe and represent linear relations, using: <ul style="list-style-type: none"> • words • ordered pairs • tables of values • graphs • equations. 	Reading Values from a Line Graphing from a Table of Values Pattern Rules and Tables Find the Pattern Rule Equation of a Line 3 Equation of a Line 2 Equation of a Line 1 $y=ax$ General Form of a Line Equation from Point and Gradient Equation from Two Points

Grade 10C

Strand	Substrand	Outcome	Outcome Description	Activities
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.5	Determine the characteristics of the graphs of linear relations, including the: <ul style="list-style-type: none"> intercepts slope domain range. 	Intercepts Gradient Graphing from a Table of Values Graphing from a Table of Values 2 Reading Values from a Line Determining a Rule for a Line
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.6	Relate linear relations expressed in: <ul style="list-style-type: none"> slope-intercept form ($y=mx + b$) general form ($Ax + By + C=0$) slope-point form ($y - y_1 = m(x - x_1)$) to their graphs. 	Equation from Point and Gradient General Form of a Line Equation of a Line 3 Equation of a Line 2 Equation of a Line 1 Gradients Gradients for Real $y=ax$ Slope of a Line Which Straight Line? Are they Parallel? Are they Perpendicular? Horizontal and Vertical Lines Equation from Two Points
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.7	Determine the equation of a linear relation, given: <ul style="list-style-type: none"> a graph a point and the slope two points a point and the equation of a parallel or perpendicular line to solve problems. 	Gradient Which Straight Line? Equation from Point and Gradient Modelling Linear Relationships Linear Modelling Equation of a Line 3 Equation of a Line 2 Equation of a Line 1 Gradients Gradients for Real $y=ax$ Slope of a Line Are they Parallel? Are they Perpendicular? Horizontal and Vertical Lines Equation from Two Points


Alberta Mathematics Program of Studies

Grade 10C

Strand	Substrand	Outcome	Outcome Description	 Activities
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.8	Represent a linear function, using function notation.	Functions Notation 1
Relations and Functions	Develop algebraic and graphical reasoning through the study of relations	10C.RF.9	Solve problems that involve systems of linear equations in two variables, graphically and algebraically.	Breakeven Point Linear Modelling Solve Systems by Graphing Equations of a Line 2


Alberta Mathematics Program of Studies

Grade 10–3

Strand	Substrand	Outcome	Outcome Description	 Activities
Measurement	Develop spatial sense through direct and indirect measurement.	10-3.M.1	<p>Demonstrate an understanding of SI by:</p> <ul style="list-style-type: none"> describing the relationships of the units for length, area, volume, capacity, mass and temperature applying strategies to convert SI units to imperial units. 	Converting cm and mm Converting Volume Cups, Pints, Quarts, Gallons Capacity Addition Metres and Kilometres Centimetres and Metres Customary Units of Capacity Grams and Kilograms Millilitres and Litres Converting Units of Mass Mass Addition Customary Units of Weight 1 Customary Units of Weight 2 Converting Units of Length Customary Units of Length
Measurement	Develop spatial sense through direct and indirect measurement.	10-3.M.2	<p>Demonstrate an understanding of the imperial system by:</p> <ul style="list-style-type: none"> describing the relationships of the units of length, area, volume, capacity, mass and temperature comparing the American and British imperial units for capacity applying strategies to convert imperial units to SI units. 	Teacher directed
Measurement	Develop spatial sense through direct and indirect measurement.	10-3.M.3	Solve and verify problems that involve SI and imperial linear measurements, including decimal and fractional measurements.	Mass Word Problems Capacity Word Problems

Alberta Mathematics Program of Studies

Grade 10–3

Strand	Substrand	Outcome	Outcome Description	 Activities
Measurement	Develop spatial sense through direct and indirect measurement.	10-3.M.4	Solve problems that involve SI and imperial area measurements of regular, composite and irregular 2-D shapes and 3-D objects, including decimal and fractional measurements, and verify the solutions.	Area of Shapes Area: Squares and Rectangles Area: Right Triangles Area: Triangles Area: Parallelograms Area: Compound Figures Area: Composite Shapes Area: Circles Converting Units of Area Surface Area: Rectangular Prisms Surface Area: Rectangular Pyramids Surface Area: Triangular Prisms Surface Area: Cylinders Surface Area: Square Pyramids Surface Area: Cones Surface Area: Spheres Surface Area: Cuboids Surface Area: Rearrange Formula Net
Geometry	Develop spatial sense	10-3.G.1	Analyze puzzles and games that involve spatial reasoning, using problem-solving strategies.	Teacher directed
Geometry	Develop spatial sense	10-3.G.2	Demonstrate an understanding of Pythagorean theorem by: <ul style="list-style-type: none"> identifying situations that involve right triangles verifying the formula applying the formula solving problems. 	Pythagorean Theorem Pythagorean Triads
Geometry	Develop spatial sense	10-3.G.3	Demonstrate an understanding of similarity of convex polygons including regular and irregular polygons.	Similar Figures Similar Figures 1 Scale Factor Using Similar Triangles

Alberta Mathematics Program of Studies

Grade 10–3

Strand	Substrand	Outcome	Outcome Description	Activities
Geometry	Develop spatial sense	10-3.G.4	<p>Demonstrate an understanding of the primary trigonometric ratios (sine, cosine, tangent) by:</p> <ul style="list-style-type: none"> • applying similarity to right triangles • generalizing patterns from similar right triangles • applying the primary trigonometric ratios • solving problems. 	<p>Sin A Cos A Tan A Trigonometry Problems 1 Trigonometry Problems 2 Find Unknown Angles Find Unknown Sides Elevation and Depression</p>
Geometry	Develop spatial sense	10-3.G.5	Solve problems that involve parallel, perpendicular and transversal lines, and pairs of angles formed between them.	<p>Angles and Parallel Lines Parallel Lines</p>
Geometry	Develop spatial sense	10-3.G.6	<p>Demonstrate an understanding of angles, including acute, right, obtuse, straight and reflex by:</p> <ul style="list-style-type: none"> • drawing • replicating and constructing • bisecting • solving problems. 	<p>Classifying Angles Labelling Angles Estimating Angles What Type of Angle? Angle Sum of a Triangle Angle Sum of a Quadrilateral Angles in a Revolution Exterior Angles of a Triangle Equal, Complement or Supplement? Hypotenuse, Adjacent, Opposite Measuring Angles</p>
Number	Develop number sense and critical thinking skills	10-3.N.1	Solve problems that involve unit pricing and currency exchange, using proportional reasoning.	<p>Purchase Options Best Buy Unitary Method Rates Solve Proportions</p>


Alberta Mathematics Program of Studies

Grade 10–3

Strand	Substrand	Outcome	Outcome Description	Activities
Number	Develop number sense and critical thinking skills	10-3.N.2	Demonstrate an understanding of income, including: <ul style="list-style-type: none"> wages salary contracts commissions piecework to calculate gross pay and net pay.	Wages and Salaries Commission Working Overtime Calculating Income Tax Budgeting Simple Interest Successive Discounts Piecework and Royalties
Algebra	Develop algebraic reasoning	10-3.A.1	Solve problems that require the manipulation and application of formulas related to: <ul style="list-style-type: none"> perimeter area the Pythagorean theorem primary trigonometric ratios income. 	Perimeter: Triangles Perimeter: Triangles 1 Area: Squares and Rectangles Complex Substitution Substitution in Formulae More Substitution in Formulae Real Formulae Area: Right Triangles Area: Composite Shapes Area: Compound Figures Changing the Subject Rearranging the Equation Surface Area: Rearranging Formula Perimeter Detectives 2 Perimeter, Area, Dimension Change

Alberta Mathematics Program of Studies

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.1	Use estimation strategies to estimate and round numbers to the nearest unit, tenth and hundredth to solve problems in everyday contexts.	Expanding Numbers Place Value to Thousands Place Value to Millions Place Value to Billions Rounding Numbers Rounding Decimals Nearest 100? Nearest 1000? Estimate Sums Estimate Differences Estimate Products Estimate Quotients
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.2	Represent and describe the relationships between proper/improper fractions, equivalent fractions and mixed numbers concretely, pictorially and symbolically.	Mixed to Improper Equivalent Fractions on a Number Line 1 Equivalent Fractions on a Number Line 2 Equivalent Fractions Improper to Mixed Common Denominator No Common Denominator Converting Mixed and Improper
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.3	Convert among fractions, decimals and percents concretely, pictorially and symbolically to facilitate the solving of problems.	Decimals to Fractions 1 Decimals to Fractions 2 Fractions to Decimals Fractions to Decimals 2 Percentage to Fraction Match Decimals and Percentages Percents and Decimals Percents to Fractions
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.4	Represent and explain the meaning of integers in everyday contexts concretely, pictorially and symbolically.	Integers on a Number Line Ordering Integers Comparing Integers


Alberta Mathematics Program of Studies

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.5	Estimate and apply arithmetic operations to solve everyday problems involving: <ul style="list-style-type: none"> • whole numbers • decimals • fractions • mixed numbers • percents. 	Adding and Subtracting Decimals Decimal by Whole Number Decimal by Decimal Divide Decimal by Whole Number Divide Decimal by Decimal Multiply Decimals and Powers of 10 Multiply Decimals: 10, 100, 1000 Divide Decimals: 10, 100, 1000 Add Like Fractions Add Unlike Fractions Subtract Like Fractions Subtract Unlike Fractions Multiplying Fractions Dividing Fractions Estimating Products with Fractions Divide Whole Number by Fraction Fraction Word Problems Add Like Mixed Numbers Add Unlike Mixed Numbers Subtract Unlike Mixed Numbers Subtract Like Mixed Numbers Operations with Fractions Divide Mixed Numbers Multiply Mixed Numbers Percent of a Number Solve Percent Equations Percentage Word Problems What Percentages? Calculating Percentages Percentage of a Quantity


Alberta Mathematics Program of Studies

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.6	Estimate, add and subtract integers concretely, pictorially and symbolically in everyday contexts.	Integers: Order of Operations (BEDMAS) Order of Operations 1 (BEDMAS) Add Integers Subtract Integers More with Integers Integers: Add and Subtract
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.7	Assess the reasonableness of applied calculations and problem-solving strategies using a variety of tools and/or strategies; eg, estimation, charts, graphs, calculators and/or computers.	Estimate Products with Fractions Find the Mistake Checking Solutions
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.8	Calculate and compare rates and unit prices by writing ratios that involve numbers with different units.	Unitary Method Ratio and Proportion Ratio Ratios Equivalent Ratios Ratio Word Problems Rates Word Problems Converting Rates
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10-4.N.9	Determine the value of a power, using a whole number base with exponents of 2 and 3.	Exponents Exponent Notation The Zero Exponent


Alberta Mathematics Program of Studies

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Number Concepts and Operations	Develop and demonstrate a number sense for whole numbers, common fractions, decimals, percent and integers and apply arithmetic operations to solve everyday problems	KE10–4.N.10	Recognize and explain numbers in scientific notation form.	Scientific Notation
Patterns and Relations	Express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace	KE10–4.PR.1	Identify, describe and draw conclusions, in oral and written form, about patterns and relationships in nature and everyday contexts.	Teacher directed
Patterns and Relations	Express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace	KE10–4.PR.2	Create expressions, make predictions and develop rules to describe, complete and extend patterns and relationships in everyday contexts.	Pattern Rules and Tables Find the Pattern Rule Find the Function Rule Function Rules and Tables
Patterns and Relations	Express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace	KE10–4.PR.3	Distinguish between the use of variables and constants in everyday situations.	Teacher directed


Alberta Mathematics Program of Studies

Grade 10–4


Strand	Substrand	Outcome	Outcome Description	 Activities
Patterns and Relations	Express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace	KE10-4.PR.4	Graph relationships, using everyday home, community and workplace contexts and draw conclusions using patterns and relationships.	Teacher directed
Patterns and Relations (Variables and Equations)	Use variables and equations to express, summarize and apply relationships as problem-solving tools in a restricted range of contexts.	KE10-4.PR.5	Use variables, formulas and/or substitutions to solve problems in practical situations.	Simple Substitutions 1 Simple Substitutions 2 Simple Substitutions 3 Complex Substitution Writing Algebraic Expressions Writing Equations Equations to Solve Problems Constructing Formulae
Patterns and Relations (Variables and Equations)	Use variables and equations to express, summarize and apply relationships as problem-solving tools in a restricted range of contexts.	KE10-4.PR.6	Substitute numbers for variables in expressions and graph and examine the relationship.	Simple Substitutions 1 Simple Substitutions 2 Simple Substitutions 3 Complex Substitution Graphing from a Table of Values Reading Values from a Line
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.1	Select and use appropriate metric (SI) and imperial measuring devices and units to take measurements in home and work-related contexts, including: <ul style="list-style-type: none"> length mass (weight) volume (capacity). 	Operations with Length Grams and Kilograms Grams and Milligrams Centimetres and Metres Mass Addition Millilitres and Litres Capacity Addition Capacity Word Problems Mass Word Problems

Alberta Mathematics Program of Studies

Grade 10–4


Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.2	Measure within acceptable degrees of accuracy.	Teacher directed
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.3	Compare, convert and apply metric (SI) and imperial units of measure, as appropriate in everyday contexts.	Converting Units of Length Converting Units of Mass Converting cm and mm Converting Units of Area Converting Volume
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.4	Solve problems involving perimeter, area, mass (weight), and volume (capacity).	Perimeter: Squares and Rectangles Perimeter: Triangles Perimeter and Circles Perimeter: Composite Shapes Perimeter Detectives 2 Area: Squares and Rectangles Area: Triangles Area: Right Angled Triangles Area: Quadrilaterals Area: Composite Shapes Area Problems Volume: Rectangular Prisms 1 Volume: Triangular Prisms Volume: Prisms Volume: Cylinders Volume: Pyramids

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.5	Use conversion charts, calculators and/or other tools to compare and convert common metric (SI) and imperial units of measure, as required in everyday contexts.	Grams and Milligrams Centimetres and Metres Millilitres and Litres Converting Units of Length Converting Units of Mass Converting cm and mm Converting Units of Area Converting Volume
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.6	Estimate the measurements of angles in a diagram and in various environments.	Classifying Angles Measuring Angles Estimating Angles Comparing Angles Equal Angles Right Angle Relation Labelling Angles Equal, Complement or Supplement?
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.7	Measure and draw angles using a straight edge, protractor and other technology.	Measuring Angles
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.8	Estimate, measure and calculate the area of a circle.	Area: Circles 1


Alberta Mathematics Program of Studies

Grade 10–4

Strand	Substrand	Outcome	Outcome Description	 Activities
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.9	Calculate the unknown when given the circumference, diameter and/or radius of a circle to solve everyday problems.	Circumference: Circles Circle Terms Labelling Circles Identify Parts of Circles 1
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.10	Estimate and calculate the area of a circle to solve problems in everyday contexts.	Area: Circles 1
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.11	Estimate and apply a variety of arithmetic operations, using hours and minutes, in everyday applications.	Hours and Minutes Elapsed Time Time Zones 24 Hour Time
Shape and Space (Measurement)	Estimate, measure and compare, using whole numbers, decimals, fractions and metric (SI) and imperial units of measure, to solve everyday problems	KE10-4.SS.12	Estimate and measure temperature and calculate changes in temperature.	Temperature


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Shape and Space (3-D Objects and 2-Shapes and Transformations)	Extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence symmetry, translation, rotation and reflection	KE10-4.SS.13	Measure and classify pairs of angles as either complementary or supplementary.	Equal, Complement or Supplement?
Shape and Space (3-D Objects and 2-Shapes and Transformations)	Extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence symmetry, translation, rotation and reflection	KE10-4.SS.14	Represent, examine and describe enlargements and reductions.	Scale Scale Factor Scale Measurement
Shape and Space (3-D Objects and 2-Shapes and Transformations)	Extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence symmetry, translation, rotation and reflection	KE10-4.SS.15	Interpret scale models and identify the geometric properties associated with figures and shapes used in representations.	Floor Plans


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Shape and Space (3-D Objects and 2-Shapes and Transformations)	Extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence symmetry, translation, rotation and reflection	KE10-4.SS.16	Reproduce drawings or objects to scale, using a variety of strategies; e.g., grid paper, dot paper and/or computer software.	Teacher directed
Shape and Space (3-D Objects and 2-Shapes and Transformations)	Extend their awareness of objects and shapes, using visualization and symmetry, and create and examine patterns and designs, using visualization, congruence symmetry, translation, rotation and reflection	KE10-4.SS.17	Draw designs, using ordered pairs in all four quadrants of a coordinate grid, with translation and reflection images.	Ordered Pairs Coordinate Graphs Flip, Slide, Turn Symmetry Symmetry or Not? Rotational Symmetry Rotations: Coordinate Plane Transformations Transformations: Coordinate Plane
Statistics and Probability (Collecting and Analyzing Information)	Develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required	KE10-4.SP.1	Predict, interpret, make comparisons and communicate information from graphs, tables, charts and other sources at home and in the workplace.	Venn Diagrams

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Statistics and Probability (Collecting and Analyzing Information)	Develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required	KE10-4.SP.2	Recognize the uses of data and data collection and display tools in everyday and work-related situations.	Histograms Stem and Leaf Introduction Stem-and-Leaf Plots Divided Bar Graphs Bar Graphs 2 Reading from a Bar Chart Circle Graphs
Statistics and Probability (Collecting and Analyzing Information)	Develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required	KE10-4.SP.3	Record information and organize files and directories, using computers and/or other tools.	Carroll Diagram Venn Diagram
Statistics and Probability (Collecting and Analyzing Information)	Develop and implement a plan for the collection, display and examination of data and information, using technology and other strategies as required	KE10-4.SP.4	Examine a plan for collecting and processing information and modify as appropriate for everyday situations.	Teacher directed

Notes



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