Grade Four	Grade Five	Grade Six	Grade Seven	Grade Eight
number concepts to 10 000	**number concepts** to 1 000 000	**number concepts**: small to large numbers (thousandths to billions)		
◦ counting: ▪ multiples ▪ flexible counting strategies ▪ whole number benchmarks ◦ Numbers to 10 000 can be arranged and recognized: ▪ comparing and ordering numbers ▪ estimating large quantities ◦ place value: ▪ 1000s, 100s, 10s, and 1s ▪ understanding the relationship between digit places and their value, to 10 000	◦ counting: ◦ multiples ◦ flexible counting strategies ◦ whole number benchmarks ◦ Numbers to 1 000 000 can be arranged and recognized: ◦ comparing and ordering numbers ◦ estimating large quantities ◦ place value: ◦ 100 000s, 10 000s, 1000s, 100s, 10s, and 1s ◦ understanding the relationship between digit places and their value, to 1 000 000 ◦ First Peoples use unique counting systems (e.g., Tsimshian use of three counting systems, for animals, people and things; Tlingit counting for the naming of numbers e.g., 10 = two hands, 20 = one person)	◦ place value from thousandths to billions, operations with thousandths to billions ◦ numbers used in science, medicine, technology, and media ◦ compare, order, estimate		
Decimals: to hundredths & addition and subtraction of decimals to hundredths	**Decimals:** to thousandths and addition and subtraction of decimals to thousandths			
◦ Fractions and decimals are numbers that represent an amount or quantity. ◦ Fractions and decimals can represent parts of a region, set, or linear model. ◦ Fractional parts and decimals are equal shares or equal-sized portions of a whole or unit. ◦ understanding the relationship between fractions and decimals ◦ estimating decimal sums and differences ◦ using visual models, such as base 10 blocks, place-value mats, grid paper, and number lines ◦ using addition and subtraction in real-life contexts and problem-based situations ◦ whole-class number talks	◦ estimating decimal sums and differences ◦ using visual models such as base 10 blocks, place-value mats, grid paper, and number lines ◦ using addition and subtraction in real-life contexts and problem-based situations ◦ whole-class number talks			

Fractions: Comparing and ordering fractions	**Fractions:** Equivalent fractions and whole-number, fraction, and decimal benchmarks	**Fractions:** ◦ improper fractions and mixed numbers ◦ introduction to ratios ◦ whole-number percents and percentage discounts	**Fractions:** ◦ **relationships** between decimals, fractions, ratios, and percents	**Fractions:** ◦ percents less than 1 and greater than 100 (decimal and fractional percents) ◦ numerical proportional reasoning (rates, ratio, proportions, and percent) ◦ operations with fractions (addition, subtraction, multiplication, division, and order of operations)
◦ comparing and ordering of fractions with common denominators ◦ estimating fractions with benchmarks (e.g., zero, half, whole) ◦ using concrete and visual models ◦ equal partitioning	◦ Two equivalent fractions are two ways to represent the same amount (having the same whole). ◦ comparing and ordering of fractions and decimals ◦ addition and subtraction of decimals to thousandths ◦ estimating decimal sums and differences ◦ estimating fractions with benchmarks (e.g., zero, half, whole) ◦ equal partitioning	◦ using benchmarks, number line, and common denominators to compare and order, including whole numbers ◦ using pattern blocks, Cuisenaire Rods, fraction strips, fraction circles, grids ◦ birchbark biting ◦ comparing numbers, comparing quantities, equivalent ratios ◦ part-to-part ratios and part-to-whole ratios ◦ using base 10 blocks, geoboard, 10x10 grid to represent whole number percents ◦ finding missing part (whole or percentage) ◦ 50% = 1/2 = 0.5 = 50:100	◦ conversions, equivalency, and terminating versus repeating decimals, place value, and benchmarks ◦ comparing and ordering decimals and fractions using the number line ◦ ½ = 0.5 = 50% = 50:100 ◦ shoreline cleanup ◦	◦ A worker's salary increased 122% in three years. If her salary is now $93,940, what was it originally? ◦ What is ½% of 1 billion? ◦ The population of Vancouver increased by 3.25%. What is the population if it was approximately 603,500 people last year? ◦ Beading ◦ two-term and three-term ratios, real-life examples and problems ◦ A string is cut into three pieces whose lengths form a ratio of 3:5:7. If the string was 105 cm long, how long are the pieces? ◦ creating a cedar drum box of proportions that use ratios to create differences in pitch and tone ◦ paddle making ◦ includes the use of brackets, but excludes exponents ◦ using pattern blocks or Cuisenaire Rods ◦ simplifying ½ ÷ 9/6 x (7 – 4/5) ◦ drumming and song: 1/2, 1/4, 1/8, whole notes, dot bars, rests = one beat ◦ changing tempos of traditional songs dependent on context of use ◦ proportional sharing of harvests based on family size
Addition and Subtraction: to 10 000	**Addition and Subtraction:** of whole numbers to 1 000 000			

◦ using flexible computation strategies, involving taking apart (e.g., decomposing using friendly numbers and compensating) and combining numbers in a variety of ways, regrouping ◦ estimating sums and differences to 10 000 ◦ using addition and subtraction in real-life contexts and problem-based situations ◦ whole-class number talks	◦ using flexible computation strategies involving taking apart (e.g., decomposing using friendly numbers and compensating) and combining numbers in a variety of ways, regrouping ◦ estimating sums and differences to 10 000 ◦ using addition and subtraction in real-life contexts and problem-based situations ◦ whole-class number talks			
Multiplication and Division: of 2 or 3 digit numbers by a one digit number	**Multiplication and Division:** to three digits, including division with remainders	**Multiplication and Division:** ◦ order of operations with whole numbers ◦ factors and multiples — greatest common factor and least common multiple ◦ multiplication and division of decimals	**Multiplication and Division:** ◦ **operations with integers** (addition, subtraction, multiplication, division, and order of operations) ◦ **operations with decimals** (addition, subtraction, multiplication, division, and order of operations)	
◦ understanding the relationships between multiplication and division, multiplication and addition, division and subtraction ◦ using flexible computation strategies (e.g., decomposing, distributive principle, commutative principle, repeated addition and repeated subtraction) ◦ using multiplication and division in real-life contexts and problem-based situations ◦ whole-class number talks	◦ understanding the relationships between multiplication and division, multiplication and addition, and division and subtraction ◦ using flexible computation strategies (e.g., decomposing, distributive principle, commutative principle, repeated addition, repeated subtraction) ◦ using multiplication and division in real-life contexts and problem-based situations ◦ whole-class number talks	◦ includes the use of brackets, but excludes exponents ◦ quotients can be rational numbers ◦ prime and composite numbers, divisibility rules, factor trees, prime factor phrase (e.g., $300 = 2^2 \times 3 \times 5^2$) ◦ using graphic organizers (e.g., Venn diagrams) to compare numbers for common factors and common multiples ◦ 0.125 x 3 or 7.2 ÷ 9 ◦ using base 10 block array ◦ birchbark biting ◦	◦ addition, subtraction, multiplication, division, and order of operations ◦ concretely, pictorially, symbolically ◦ order of operations includes the use of brackets, excludes exponents ◦ using two-sided counters ◦ 9–(–4) = 13 because –4 is 13 away from +9 ◦ extending whole-number strategies to decimals ◦ includes the use of brackets, but excludes exponents	◦
Fact Fluency: ◦ addition and subtraction facts to 20 (developing **computational fluency**) ◦ multiplication and division **facts** to 100 (introductory computational strategies)	**Fact Fluency:** ◦ **addition and subtraction facts to 20** (extending computational fluency) ◦ multiplication and division **facts to 100** (emerging computational fluency)	**Fact Fluency:** ◦ multiplication and division **facts to 100** (developing computational fluency)	**Fact Fluency:** ◦ multiplication and division **facts to 100** (extending computational fluency)	
◦ Provide opportunities for authentic practice, building on previous	◦ Provide opportunities for authentic practice, building on previous	◦ mental math strategies (e.g., the double-double strategy to multiply	◦ When multiplying 214 by 5, we can multiply by 10, then divide by	

grade-level addition and subtraction facts. ◦ flexible use of mental math strategies ◦ Provide opportunities for concrete and pictorial representations of multiplication. ◦ building computational fluency ◦ Use games to provide opportunities for authentic practice of multiplication computations. ◦ looking for patterns in numbers, such as in a hundred chart, to further develop understanding of multiplication computation ◦ Connect multiplication to skip-counting. ◦ Connecting multiplication to division and repeated addition. ◦ Memorization of facts is not intended for this level. ◦ Students will become more fluent with these facts. ◦ using mental math strategies, such as doubling or halving ◦ Students should be able to recall the following multiplication facts by the end of Grade 4 (2s, 5s, 10s).	grade-level addition and subtraction facts. ◦ applying strategies and knowledge of addition and subtraction facts in real-life contexts and problem-based situations, as well as when making math-to-math connections (e.g., for 800 + 700, you can annex the zeros and use the knowledge of 8 + 7 to find the total) ◦ Provide opportunities for concrete and pictorial representations of multiplication. ◦ Use games to provide opportunities for authentic practice of multiplication computations. ◦ looking for patterns in numbers, such as in a hundred chart, to further develop understanding of multiplication computation ◦ Connect multiplication to skip-counting. ◦ Connect multiplication to division and repeated addition. ◦ Memorization of facts is not intended this level. ◦ Students will become more fluent with these facts. ◦ using mental math strategies such as doubling and halving, annexing, and distributive property ◦ Students should be able to recall many multiplication facts by the end of Grade 5 (e.g., 2s, 3s, 4s, 5s, 10s). ◦ developing computational fluency with facts to 100	23 x 4)	2 to get 1070.	
Patterns: increasing and decreasing **patterns**, using tables and charts	**Patterns:** rules for increasing and decreasing patterns with words, numbers, symbols, and variables	**Patterns:** increasing and decreasing patterns, using expressions, tables, and graphs as functional relationships		
◦ Change in patterns can be represented in charts, graphs, and tables. ◦ using words and numbers to describe increasing and decreasing patterns		◦ limited to discrete points in the first quadrant ◦ visual patterning (e.g., colour tiles) ◦ Take 3 add 2 each time, $2n + 1$, and 1 more than twice a number *all* describe the pattern 3, 5, 7, …		

◦ fish stocks in lakes, life expectancies		◦ graphing data on First Peoples language loss, effects of language intervention		
Algebra: ◦ algebraic relationships among quantities ◦ **one-step equations** with an unknown number, using all operations	**Algebra:** ◦ **one-step equations** with variables	**Algebra:** ◦ one-step equations with whole-number coefficients and solutions	**Algebra:** ◦ **discrete linear relations**, using expressions, tables, and graphs ◦ **two-step equations** with whole-number coefficients, constants, and solutions	**Algebra:** ◦ perfect squares and cubes ◦ square and cube roots ◦ **discrete linear relations** (extended to larger numbers, limited to integers) ◦ **expressions**- writing and evaluating using substitution ◦ **two-step equations** with integer coefficients, constants, and solutions
◦ representing and explaining one-step equations with an unknown number ◦ describing pattern rules, using words and numbers from concrete and pictorial representations ◦ planning a camping or hiking trip; planning for quantities and materials needed per individual and group over time ◦ one-step equations for all operations involving an unknown number (e.g., ___ + 4 = 15, 15 – □ = 11) ◦ start unknown (e.g., n + 15 = 20; 20 – 15 = □) ◦ change unknown (e.g., 12 + n = 20) ◦ result unknown (e.g., 6 + 13 = __)	◦ solving one-step equations with a variable ◦ expressing a given problem as an equation, using symbols (e.g., 4 + X = 15)	◦ preservation of equality (e.g., using a balance, algebra tiles) ◦ $3x = 12$, $x + 5 = 11$	◦ four quadrants, limited to integral coordinates ◦ $3n + 2$; values increase by 3 starting from *y*-intercept of 2 ◦ deriving relation from the graph or table of values ◦ Small Number stories: *Small Number and the Old Canoe*, *Small Number Counts to 100* (mathcatcher.irmacs.sfu.ca/stories) ◦ solving and verifying $3x + 4 = 16$ ◦ modelling the preservation of equality (e.g., using balance, pictorial representation, algebra tiles) ◦ spirit canoe trip pre-planning and calculations ◦ Small Number stories: *Small Number and the Big Tree* (mathcatcher.irmacs.sfu.ca/stories)	◦ using colour tiles, pictures, or multi-link cubes ◦ building the number or using prime factorization ◦ finding the cube root of 125 ◦ finding the square root of 16/169 ◦ estimating the square root of 30 ◦ two-variable discrete linear relations ◦ expressions, table of values, and graphs ◦ scale values (e.g., tick marks on axis represent 5 units instead of 1) ◦ four quadrants, integral coordinates ◦ using an expression to describe a relationship ◦ evaluating $0.5n – 3n + 25$, if $n = 14$ ◦ solving and verifying $3x – 4 = –12$ ◦ modelling the preservation of equality (e.g., using a balance, manipulatives, algebra tiles, diagrams) ◦ spirit canoe journey calculations ◦
Measurement: how to **tell time** with analog and digital clocks, using 12- and 24-hour clocks	**Measurement:** ◦ area measurement of squares and rectangles ◦ relationships between **area and perimeter** ◦ duration, using measurement of **time**	**Measurement:** • **perimeter** of complex shapes • **area** of triangles, parallelograms, and trapezoids • **angle** measurement and classification • **volume and capacity**	**Measurement:** ◦ **circumference** and area of circles ◦ **volume** of rectangular prisms and cylinders	**Measurement:** ◦ **surface area and volume** of regular solids, including triangular and other right prisms and cylinders

◦ understanding how to tell time with analog and digital clocks, using 12- and 24-hour clocks ◦ understanding the concept of a.m. and p.m. ◦ understanding the number of minutes in an hour ◦ understanding the concepts of using a circle and of using fractions in telling time (e.g., half past, quarter to) ◦ telling time in five-minute intervals ◦ telling time to the nearest minute ◦ First Peoples use of numbers in time and seasons, represented by seasonal cycles and moon cycles (e.g., how position of sun, moon, and stars is used to determine times for traditional activities, navigation)	◦ measuring area of squares and rectangles, using tiles, geoboards, grid paper ◦ investigating perimeter and area and how they are related to but not dependent on each other ◦ use traditional dwellings ◦ Invite a local Elder or knowledge keeper to talk about traditional measuring and estimating techniques for hunting, fishing, and building. ◦ understanding elapsed time and duration ◦ applying concepts of time in real-life contexts and problem-based situations ◦ daily and seasonal cycles, moon cycles, tides, journeys, events	◦ A complex shape is a group of shapes with no holes (e.g., use colour tiles, pattern blocks, tangrams). ◦ grid paper explorations ◦ deriving formulas ◦ making connections between area of parallelogram and area of rectangle ◦ birchbark biting ◦ straight, acute, right, obtuse, reflex ◦ constructing and identifying; include examples from local environment ◦ estimating using 45°, 90°, and 180° as reference angles ◦ angles of polygons ◦ Small Number stories: *Small Number and the Skateboard Park* (mathcatcher.irmacs.sfu.ca/stories) ◦ using cubes to build 3D objects and determine their volume ◦ referents and relationships between units (e.g., cm^3, m^3, mL, L) ◦ the number of coffee mugs that hold a litre ◦ berry baskets, seaweed drying ◦	◦ constructing circles given radius, diameter, area, or circumference ◦ finding relationships between radius, diameter, circumference, and area to develop $C = \pi \times d$ formula ◦ applying $A = \pi \times r \times r$ formula to find the area given radius or diameter ◦ drummaking, dreamcatcher making, stories of SpiderWoman (Dene, Cree, Hopi, Tsimshian), basket making, quill box making (Note: Local protocols should be considered when choosing an activity.) ◦ volume = area of base x height ◦ bentwood boxes, wiigwaasabak and mide-wiigwaas (birch bark scrolls) ◦ *Exploring Math through Haida Legends: Culturally Responsive Mathematics* (haidanation.ca/Pages/language /haida_legends/media/Lessons /RavenLes4-9.pdf)	◦ exploring strategies to determine the surface area and volume of a regular solid using objects, a net, 3D design software ◦ volume = area of the base x height ◦ surface area = sum of the areas of each side
Geometry: ◦ regular and irregular **polygons** ◦ **perimeter** of regular and irregular shapes ◦ **line symmetry**	**Geometry:** • classification of prisms and pyramids	**Geometry:** ◦ **triangles**		**Geometry:** ◦ Pythagorean theorem ◦ construction, views, and nets of 3D objects
◦ describing and sorting regular and irregular polygons based on multiple attributes ◦ investigating polygons (polygons are closed shapes with similar attributes) ◦ Yup'ik border patterns ◦ using geoboards and grids to create, represent, measure, and calculate perimeter ◦ using concrete materials such as pattern blocks to create designs that have a mirror image within	◦ investigating 3D objects and 2D shapes, based on multiple attributes ◦ describing and sorting quadrilaterals ◦ describing and constructing rectangular and triangular prisms ◦ identifying prisms in the environment	◦ scalene, isosceles, equilateral ◦ right, acute, obtuse ◦ classified regardless of orientation		◦ modelling the Pythagorean theorem ◦ finding a missing side of a right triangle ◦ deriving the Pythagorean theorem ◦ constructing canoe paths and landings given current on a river ◦ First Peoples constellations ◦ top, front, and side views of 3D objects ◦ matching a given net to the 3D object it represents ◦ drawing and interpreting top, front,

them ◦ First Peoples art, borders, birchbark biting, canoe building ◦ Visit a structure designed by First Peoples in the local community and have the students examine the symmetry, balance, and patterns within the structure, then replicate simple models of the architecture focusing on the patterns they noted in the original.				and side views of 3D objects ◦ constructing 3D objects with nets ◦ using design software to create 3D objects from nets ◦ bentwood boxes, lidded baskets, packs ◦
Transformations	**Transformations:** ◦ single **transformations**	**Transformations:** ◦ combinations of **transformations**	**Transformations:** ◦ combinations of **transformations**	
	◦ single transformations (slide/translation, flip/reflection, turn/rotation) ◦ using concrete materials with a focus on the motion of transformations ◦ weaving, cedar baskets, designs	◦ plotting points on Cartesian plane using whole-number ordered pairs ◦ translation(s), rotation(s), and/or reflection(s) on a single 2D shape ◦ limited to first quadrant ◦ transforming, drawing, and describing image ◦ Use shapes in First Peoples art to integrate printmaking (e.g., Inuit, Northwest coastal First Nations, frieze work) (mathcentral.uregina.ca/RR/database/RR.09.01/mcdonald1/)	◦ four quadrants, integral coordinates ◦ translation(s), rotation(s), and/or reflection(s) on a single 2D shape; combination of successive transformations of 2D shapes; tessellations ◦ First Peoples art, jewelry making, birchbark biting	
Graphing: ◦ **one-to-one correspondence** and many-to-one correspondence, using bar graphs and pictographs	**Graphing:** ◦ one-to-one correspondence and **many-to-one correspondence**, using double bar graphs	**Graphing:** ◦ line graphs	**Graphing:** ◦ **Cartesian coordinates** and graphing ◦ **circle graphs**	
◦ many-to-one correspondence: one symbol represents a group or value (e.g., on a bar graph, one square may represent five cookies) ◦	◦ many-to-one correspondence: one symbol represents a group or value (e.g., on a bar graph, one square may represent five cookies)	◦ table of values, data set; creating and interpreting a line graph from a given set of data	◦ origin, four quadrants, integral coordinates, connections to linear relations, transformations ◦ overlaying coordinate plane on medicine wheel, beading on dreamcatcher, overlaying coordinate plane on traditional maps ◦ constructing, labelling, and interpreting circle graphs ◦ translating percentages displayed in a circle graph into quantities and vice versa ◦ visual representations of tidepools or traditional meals on plates	

Probability: probability experiments	**Probability**: probability experiments, single events or outcomes	**Probability: single-outcome probability**, both theoretical and experimental	**Probability: experimental probability** with two independent events	**Probability:** ◦ central tendency ◦ **theoretical probability** with two independent event
◦ predicting single outcomes (e.g., when you spin using one spinner and it lands on a single colour) ◦ using spinners, rolling dice, pulling objects out of a bag ◦ recording results using tallies ◦ Dene/Kaska hand games, Lahal stick games	◦ predicting outcomes of independent events (e.g., when you spin using a spinner and it lands on a single colour) ◦ predicting single outcomes (e.g., when you spin using a spinner and it lands on a single colour) ◦ using spinners, rolling dice, pulling objects out of a bag ◦ representing single outcome probabilities using fractions	◦ single-outcome probability events (e.g., spin a spinner, roll a die, toss a coin) ◦ listing all possible outcomes to determine theoretical probability ◦ comparing experimental results with theoretical expectation ◦ Lahal stick games	◦ experimental probability, multiple trials (e.g., toss two coins, roll two dice, spin a spinner twice, or a combination thereof) ◦ dice games (web.uvic.ca/~tpelton/fn-math/fn-dicegames.html)	◦ mean, median, and mode ◦ with two independent events: sample space (e.g., using tree diagram, table, graphic organizer) ◦ rolling a 5 on a fair die and flipping a head on a fair coin is 1/6 x ½ = 1/12 ◦ deciding whether a spinner in a game is fair
Financial Literacy: monetary calculations, including making change with amounts to 100 dollars and making simple financial decisions	**Financial Literacy**: monetary calculations, including making change with amounts to 1000 dollars and developing simple financial plans	**Financial Literacy:** — simple budgeting and consumer math	**Financial Literacy**: financial percentage	**Financial Literacy**: best buys
◦ making monetary calculations, including decimal notation in real-life contexts and problem-based situations ◦ applying a variety of strategies, such as counting up, counting back, and decomposing, to calculate totals and make change ◦ making simple financial decisions involving earning, spending, saving, and giving ◦ equitable trade rules	◦ making monetary calculations, including making change and decimal notation to $1000 in real-life contexts and problem-based situations ◦ applying a variety of strategies, such as counting up, counting back, and decomposing, to calculate totals and make change ◦ making simple financial plans to meet a financial goal ◦ developing a budget that takes into account income and expenses	◦ informed decision making on saving and purchasing ◦ How many weeks of allowance will it take to buy a bicycle?	◦ financial percentage calculations ◦ sales tax, tips, discount, sale price	◦ coupons, proportions, unit price, products and services ◦ proportional reasoning strategies (e.g., unit rate, equivalent fractions given prices and quantities)