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| **MATH 4**  **Planning - KDU** |
| **CORE COMPETENCIES** **COMMUNICATION**  | **CORE COMPETENCIES** **THINKING (CRITICAL/CREATIVE)** | **CORE COMPETENCIES****(PERSONAL/SOCIAL)** |
| **CURRICULAR COMPETENCIES** | **BIG IDEA (Understand…)** | **What do we want students to DO?****(Activities, lessons…)**  | **Content (& Elaborations)****(Know)** |
| **Reasoning and analyzing*** Use reasoning and logic to explore and make connections
* Estimate reasonably *(estimating by comparing to something familiar (e.g., more than 5, taller than me)*
* Develop mental math strategies *(working toward developing fluent and flexible thinking about number)* and abilities to make sense of quantities
* Use technology *(calculators, virtual manipulatives, concept-based apps)* to explore math
* Model *(acting it out, using concrete materials, drawing pictures)* math in contextualized experiences

**Understanding and solving*** Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
* Visualize to explore mathematical concepts
* Develop & use multiple strategies (visual, oral, role-play, experimental, written, symbolic) to engage in problem solving
* Engage in problem-solving experiences that are connected *(in daily activities, local and traditional practices, the environment, popular media and news events, cross-curricular integration; Patterns are important in First Peoples technology, architecture, and artwork.; Have students pose and solve problems or ask questions connected to place, stories, and cultural practices.)* to place, story, and cultural practices relevant to the local First Peoples communities, the local community and other cultures

**Communicating and representing*** Communicate *(concretely, pictorially, symbolically, and by using spoken or written language to express, describe, explain, and apply mathematical ideas; using technology such as screencasting apps, digital photos)* math thinking in many ways
* Use mathematical vocabulary and language to contribute to mathematical discussions
* Explain and justify *(using mathematical arguments; “Prove it!”)* mathematical ideas and decisions
* Represent mathematical ideas in concrete, pictorial, and symbolic forms *(Use local materials gathered outside for concrete and pictorial representations.)*

**Connecting and reflecting*** Reflect (sharing the mathematical thinking of self and others, including evaluating strategies and solutions, extending, and posing new problems and questions) on mathematical thinking
* Connect mathematical concepts to each other and to other areas and personal interests (to develop a sense of how mathematics helps us understand ourselves and the world around us (e.g., daily activities, local and traditional practices, the environment, popular media and news events, social justice, and cross-curricular integration)
* Incorporate (how ovoid has different look to represent different animal parts; invite local First Peoples Elders and knowledge keepers to share their knowledge.) First Peoples worldviews and perspectives to make connections (Bishop’s cultural practices: counting, measuring, locating, designing, playing, explaining (csus.edu/indiv/o/oreyd/ACP.htm\_files/abishop.htm); aboriginaleducation.ca; Teaching Mathematics in a First Nations Context,; FNESC fnesc.ca/k-7/) to mathematical concepts
 | Fractions and decimals are types of numbers that can represent quantities.Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division.Regular changes in patterns can be identified and represented using tools and tables. | *Questions to support inquiry with students:* * What is the relationship between fractions and decimals?
* How are these fractions (e.g., 1/2 and 7/8) alike and different?
* How do we use fractions and decimals in our daily life?
* What stories live in numbers?
* How do numbers help us communicate and think about place?
* How do numbers help us communicate and think about ourselves?
* What is the relationship between multiplication and division?
* What patterns in our number system connect to our understanding of multiplication?
* How does fluency with basic multiplication facts (e.g., 2x, 3x, 5x) help us compute more complex multiplication facts?
* What regularities can you identify in these patterns?
* Where do we see patterns in the world around us?
* How can we represent increasing and decreasing regularities that we see in number patterns?
* How do tables and charts help us understand number patterns?
 | * Number concepts to 10 000 *(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))*
* Decimals to hundredths *(Fractions and decimals are numbers that represents 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)*
* Ordering and comparing fraction *(comparing and ordering of fractions with common denominators; estimating fractions with benchmarks (e.g., zero, half, whole); using concrete and visual models;*  *equal partitioning)*
* addition and subtraction to 10 000 *(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)*
* Multiplication and division *(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)* of two- or three-digit numbers by one-digit numbers
* Addition and subtraction of 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)* to hundredths
* Addition and subtraction facts to 20 (developing computational fluency) *(Teachers can provide opportunities for authentic practice, building on previous grade-level addition and subtraction facts.; flexible use of mental math strategies)*
* Multiplication and division facts *(Teachers can provide opportunities for concrete and pictorial representations of multiplication.; building computational fluency; Teachers can 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; connecting multiplication to skip-counting; connect 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 (i.e. 2s, 5s, 10s))* to 100 (introductory computational strategies)
* increasing and decreasing patterns *(Change in patterns can be represented in charts, graphs and tables.; using words and numbers to describe increasing and decreasing patterns);*  *fish stocks in lakes, life expectancies)*using tables and charts
* algebraic relationships *(representing and explaining one-step equations with an unknown number; describing pattern rules using words and numbers from concrete and pictorial representations;*  *planning for quantities and materials needed per individual and group over time)* among quantities
* one-step equations *(one-step equations for all operations involving an unknown number (e.g., \_\_\_ + 4 = 15); start unknown (e.g., n + 15 = 20); change unknown ( e.g., 12 + n = 20); result unknown (e.g., 6 + 13 = \_\_))* with an unknown number using all operations
* financial literacy *(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)* - monetary calculations, including making change with amounts to 100 dollars and making simple financial decisions
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| **Evidence of Experience (Show)** |
| **BIG IDEA (Understand…)** | **What do we want students to DO?****(Activities, lessons…)**  | **Content (& Elaborations)****(Know)** |
| Polygons are closed shapes with similar attributes *(Geometry and Measurement: We can describe, measure, and compare spatial relationships* that can be described, measured, and compared. | *Questions to support inquiry with students:* * How are these polygons alike and different?
* How can we measure polygons?
* How do the properties of shapes contribute to buildings and design?
 | * how to tell time *(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)* with analog and digital clocks using 12- and 24- hour clocks
* Regular and irregular polygons *(describing and sorting regular and irregular polygons based on multiple attributes; investigating polygons (polygons are closed shapes with similar attributes);*  *Yup’ik border patterns)*
* Perimeter *(using geoboards and grids to create, represent, measure, and calculate perimeter)* of regular and irregular shapes
* Line symmetry *(using concrete materials such as pattern blocks to create designs that have a mirror image within 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.)*
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| **Evidence of Experience (Show)** |
| **BIG IDEA (Understand…)** | **What do we want students to DO?****(Activities, lessons…)**  | **Content (& Elaborations)****(Know)** |
| Analyzing and interpreting experiments in data *(Data and Probability: Analyzing data and chance enables us to compare and interpret)* probability develops an understanding of chance. | *Questions to support inquiry with students:* * How is the probability of an event determined and described?
* What events in our lives are left to chance?
* How do probability experiments help us understand chance?
 | * One-to-one correspondence *(many-to-one correspondence: one symbol represents a group or value (e.g., on a bar graph, one square may represent five cookies))* and many-to-one correspondence, using bar graphs and pictographs
* Probability experiments *(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)*
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| **Evidence of Experience (Show)** |