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| **MATH 5**  **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
 | Numbers describe quantities that can be represented by equivalent fractions.Computational fluency and flexibility with numbers extend to operations with larger (multi-digit) numbers.Identified regularities in number patterns can be expressed in tables. | *Questions to support inquiry with students:* * How can you prove that two fractions are equivalent?
* In how many ways can you represent the fraction \_\_\_?
* 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?
* How many different ways can you solve…? (e.g., 16 x 7)
* What flexible strategies can we apply to use operations with multi-digit numbers?
* How does fluency with basic multiplication facts (e.g., 2x, 3x, 5x) help us compute more complex multiplication facts?
* How do tables and charts help us understand number patterns?
* How do tables help us see the relationship between a variable within number patterns?
* How do rules for increasing and decreasing patterns help us solve equations?
 | * Number concepts to 1 000 000 *(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)*
* Decimals to thousandths
* Equivalent fractions
* Whole-number, fractions, and decimal benchmarks *(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)*
* 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; 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 *(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, repeated subtraction); using addition and subtraction in real-life contexts and problem-based situations; whole-class number talks)*  to three digits including division with remainders
* Addition and subtraction of decimals to thousandths (*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)*
* Addition and subtraction facts to 20 *(Teachers can provide opportunities for authentic practice, building on previous grade-level addition and subtraction facts; applying strategies and knowledge of addition and subtract 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))* (extending computational fluency)
* Multiplication and division facts to 100 *(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 a hundred chart to further develop their 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 (i.e. 2s, 3s, 4s, 5s, 10s); developing computational fluency with facts to 100)* (emerging computational fluency)
* Rules for increasing and decreasing patterns with words, numbers, symbols and variables
* one-step equations *(solving one-step equations with a variable; expressing a given problem as an equation using symbols (e.g., 4 + X = 15))* with variables
* financial literacy *(* *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)* - monetary calculations, including making change with amounts to 1000 dollars and developing simple financial plans
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| **Evidence of Experience (Show)** |
| **BIG IDEA (Understand…)** | **What do we want students to DO?****(Activities, lessons…)**  | **Content (& Elaborations)****(Know)** |
| Closed shapes have area and perimeter that can be described, measured, and compared.  | *Questions to support inquiry with students:* * What is the relationship between area and perimeter?
* What standard units do we use to measure area and perimeter?
* When might an understanding of area and perimeter be useful?
 | * area measurement of squares and rectangles
* relationship between area and perimeter *(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)*
* duration, using measurement of time *(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)*
* Classification of prisms and pyramids *(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)*
* Single transformations *(single transformations (slide/translation, flip/reflection, turn/rotation); using concrete materials with a focus on the motion of transformations;*  *weaving, cedar baskets, designs)*
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| **Evidence of Experience (Show)** |
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| Data represented in graphs can be used to show many-to-one correspondence.  | *Questions to support inquiry with students:* * How do graphs help us understand data?
* In what different ways can we represent many-to-one correspondence in a graph?
* Why would you choose many-to-one correspondence rather than one-to-one correspondence in a graph?
 | * One-to-one correspondence and many-to-one correspondence (*one symbol represents a group or value (e.g., on a bar graph, one square may represent five cookies))* using double bar graphs
* Probability experiments *(predicting outcomes of independent events (e.g., when you spin using one spinner and it lands on a single colour); 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;*  *representing single outcome probabilities using fractions)* focusing on independence
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| **Evidence of Experience (Show)** |