Area of Learning: MATHEMATICS — Grade 4

BIG IDEAS

Number represents and describes quantity: Parts of wholes can be represented by fractions and decimals.	Developing computational fluency comes from a strong sense of number: Patterns and relations within multiplication and division develop multiplicative thinking.	We use patterns to represent identified regularities and to form generalizations: The regular change in patterns can be represented using tools and tables.	We can describe, measure, and compare spatial relationships: Polygons are closed shapes with similar attributes.	Analyzing data and chance help us to compare and interpret: Probability experiments develop an understanding of chance.

Learning Standards

Curricular Competencies	Content
Students are expected to be able to do the following: **Reasoning and analyzing** • Estimate reasonably • Develop mental math strategies and abilities to make sense of quantities • Use reasoning and logic to explore and make connections **Understanding and solving** • Using multiple strategies *[visual, oral, role-play, experimental, written, symbolic]* to engage in problem solving (e.g., visual, oral, role-play, experimental, written, symbolic) • Develop, construct, and apply mathematical understanding through role-play, inquiry, and problem solving • Engage in problem-solving experiences that are connected to place, story, and cultural practices relevant to the local community **Communicating and representing** • Communicate *[concretely, pictorially, symbolically, and by using spoken or written language to express, describe, explain, and apply mathematical ideas]* in many ways	*Students are expected to know the following:* • 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 fractions *[comparing and ordering of fractions with common denominators; estimating fractions with benchmarks (eg., zero, half, whole); using concrete and visual models]* • addition and subtraction *[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 10 000

(concretely, pictorially, symbolically, and by using spoken or written language to express, describe, explain, and apply mathematical ideas) • Describe, create, and interpret relationships through concrete, pictorial, and symbolic representations • Use technology *[pen, pencil, paper, crayons, iPad, camera]* appropriately to explore mathematics, solve problems, record, communicate, and represent thinking	• multiplication and division *[understanding the relationships between multiplication and division, multiplication and addition, division and subtraction; using flexible computation strategies (eg., 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 *[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]* of decimals 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; 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 (eg. 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],* 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]* among quantities • one-step equations *[one-step equations for all operations involving an unknown number (eg., ___ + 4 = 15); start*

	unknown (eg., n + 15 = 20); change unknown (eg., 12 + n = 20); result unknown (eg., 6 + 13 = __)] with an unknown number using all operations • 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 (eg., half past, quarter to); telling time in five-minute intervals; telling time to the nearest minute]* 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)]* • 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]* • one-to-one correspondence *[many-to-one correspondence: one symbol represents a group or value (eg., 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 (eg., when you spin using one spinner and it lands on a single colour); using spinners, rolling dice, pulling objects out of a bag]* • 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]* – monetary calculations, including making change with amounts to 100 dollars and making simple financial decisions

Learning Standards (continued)	
Curricular Competencies	**Content**
Connecting and reflecting • Visualize and describe mathematical concepts • Connect mathematical concepts to each other and make mathematical connections *[in daily activities, local and traditional practices, the environment, popular media and news events, cross-curricular integration]* to the real world • Share and reflect upon mathematical thinking • Draw upon local First Peoples knowledge and/or expertise of local Elders to make connections to mathematical topics and concepts	