Grade 1   Mathematics Big Ideas

Big Ideas –Priority 1   **Supporting Ideas – Priority 2**   **Number Facts**

[C] Communication   **[PS]** Problem Solving
[CN] Connections   **[R]** Reasoning
[ME] Mental Mathematics   **[T]** Technology and Estimation   **[V]** Visualization

Strand: **<u>Number</u>**

General Outcome: Develop number sense.

Specific Outcomes *It is expected that students will:*	**Achievement Indicators** *The following set of indicators* ***may*** *be used to determine whether students have met the corresponding specific outcome.*
1. Say the number sequence 0 to 100 by: • 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. [C, CN, ME, V]	➢ Recite forward by 1s the number sequence between two given numbers (0 to 100). ➢ Recite backward by 1s the number sequence between two given numbers (20 to 0). ➢ Read a given numeral (0 to 100) when it is presented symbolically. ➢ Skip count forward by 2s to 20, starting at 0. ➢ Skip count forward by 5s to 100, starting at 0. ➢ Skip count forward by 10s to 100, starting at 0. ➢ Identify and read numbers in the environment. ➢ Identify and correct errors and omissions in a given number sequence.
2. Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots. [C, CN, ME, V]	➢ Look briefly at a given familiar arrangement of objects or dots, and identify how many objects or dots there are without counting. ➢ Identify the number represented by a given arrangement of dots on a ten frame.

3. Demonstrate an understanding of counting by: • 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. [C, CN, ME, R, V]	➢ Answer the question, "How many are in the set?", using the last number counted in a given set. ➢ Identify and correct counting errors in a given counting sequence. ➢ Show that the count of the number of objects in a given set does not change regardless of the order in which the objects are counted. ➢ Count the number of objects in a given set, rearrange the objects, predict the new count and recount to verify the prediction. ➢ Determine the total number of objects in a given set, starting from a known quantity and counting on. ➢ Count quantity, using groups of 2, 5 or 10 and counting on. ➢ Record the number of objects in a given set (up to 100).
4. Represent and describe numbers to 20, concretely, pictorially and symbolically. [C, CN, V]	➢ Represent a given number up to 20, using a variety of manipulatives, including ten frames and base ten materials. ➢ Read given number words to 20. ➢ Partition any given quantity up to 20 into 2 parts, and identify the number of objects in each part. ➢ Model a given number, using two different objects; e.g., 10 desks represents the same number as 10 pencils. ➢ Place given numerals on a number line with benchmarks 0, 5, 10 and 20. ➢ Find examples of a given number in the environment.
5. Compare sets containing up to 20 elements, using: • referents • one-to-one correspondence to solve problems. [C, CN, ME, PS, R, V]	➢ Build a set equal to a given set that contains up to 20 elements. ➢ Build a set that has more elements than, fewer elements than or as many elements as a given set. ➢ Build several sets of different objects that have the same given number of elements in the set. ➢ Compare two given sets, using one-to-one correspondence, and describe the sets, using comparative words such as *more*, *fewer* or *as many*. ➢ Compare a set to a given referent, using comparative language. ➢ Solve a given problem (pictures and words) that involves the comparison of two quantities.

6. Estimate quantities to 20 by using referents. [C, CN, ME, PS, R, V]	➢ Estimate a given quantity by comparing it to a given referent (known quantity). ➢ Select an estimate for a given quantity from at least two possible choices, and explain the choice.
7. Demonstrate an understanding of conservation of number. [C, R, V]	➢ Explain why for a given number of counters, no matter how they are grouped, the total number of counters does not change. ➢ Group a set of given counters in more than one way.
8. Identify the number, up to 20, that is: • one more • two more • one less • two less than a given number. [C, CN, ME, R, V]	➢ Name the number that is one more, two more, one less or two less than a given number, up to 20. ➢ Represent a number on a ten frame that is one more, two more, one less or two less than a given number.
9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically, by: • 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. [C, CN, ME, PS, R, V]	➢ Act out a given problem presented orally or through shared reading. ➢ Indicate if the scenario in a given problem represents additive or subtractive action. ➢ Represent the numbers and actions presented in a given problem by using manipulatives, and record them using sketches and/or number sentences. ➢ Create an addition problem based on personal experiences, and simulate the action with counters. ➢ Create a subtraction problem based on personal experiences, and simulate the action with counters. ➢ Create a word problem for a given number sentence (equation). ➢ Represent a given problem pictorially or symbolically to show the additive or subtractive action, and solve the problem.

10. Describe and use mental mathematics strategies, such as: • counting on and counting back • making 10 • using doubles • thinking addition for subtraction for basic addition facts and related subtraction facts to 18. [C, CN, ME, PS, R, V] Understand and apply strategies for addition and related subtraction facts to 18. Recall addition and related subtraction facts to 5.	➢ Use and describe a mental mathematics strategy for determining a given sum. ➢ Use and describe a mental mathematics strategy for determining a given difference. ➢ Refine mental mathematics strategies to increase their efficiency. ➢ Write the related subtraction fact for a given addition fact. ➢ Write the related addition fact for a given subtraction fact. ➢ Demonstrate understanding and application of strategies for addition and related subtraction facts to 18. ➢ Demonstrate recall/memorization of addition and related subtraction facts to 5.

Strand: <u>Patterns and Relations (Patterns)</u>

General Outcome: Use patterns to describe the world and to solve problems.

Specific Outcomes *It is expected that students will:*	**Achievement Indicators** *The following set of indicators **may** be used to determine whether students have met the corresponding specific outcome.*
1. Demonstrate an understanding of repeating patterns (two to four elements) by: • describing • reproducing • extending • creating patterns using manipulatives, diagrams, sounds and actions. [C, PS, R, V] [ICT: P2–1.1]	➢ Describe a given repeating pattern containing two to four elements in its core. ➢ Identify and describe errors in a given repeating pattern. ➢ Identify and describe the missing element(s) in a given repeating pattern. ➢ Create and describe a repeating pattern, using a variety of manipulatives, diagrams, sounds and actions. ➢ Reproduce and extend a given repeating pattern, using manipulatives, diagrams, sounds and actions. ➢ Identify and describe a repeating pattern in the environment, e.g., in the classroom, outdoors, using everyday language. ➢ Identify repeating events; e.g., days of the week, birthdays, seasons.

2. Translate repeating patterns from one representation to another. [C, CN, R, V]	➢ Represent a given repeating pattern, using another mode; e.g., actions to sound, colour to shape, ABC ABC to bear eagle fish bear eagle fish. ➢ Describe a given repeating pattern, using a letter code; e.g., ABC ABC …
3. Sort objects, using one attribute, and explain the sorting rule. [C, CN, R, V]	➢ Identify a common attribute in a given set of objects. ➢ Choose a single attribute to sort a given set of objects, sort the set, and explain the sorting rule. ➢ Sort a given set of objects, using a given sorting rule. ➢ Determine the difference between two given pre-sorted sets of objects, and explain a possible sorting rule used to sort them.

Strand: Patterns and Relations (Variables and Equations)

General Outcome: Represent algebraic expressions in multiple ways.

Specific Outcomes *It is expected that students will:*	**Achievement Indicators** *The following set of indicators **may** be used to determine whether students have met the corresponding specific outcome.*
4. Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20). [C, CN, R, V]	➢ Construct two equal sets, using the same objects (same shape and mass), and demonstrate their equality of number, using a balance (limited to 20 elements). ➢ Construct two unequal sets, using the same objects (same shape and mass), and demonstrate their inequality of number, using a balance (limited to 20 elements). ➢ Determine if two given concrete sets are equal or unequal, and explain the process used.
5. Record equalities, using the equal symbol. [C, CN, PS, V]	➢ Represent a given equality, using manipulatives or pictures. ➢ Represent a given pictorial or concrete equality in symbolic form. ➢ Provide examples of equalities where the given sum or difference is on either the left or right side of the equal symbol (=). ➢ Record different representations of the same quantity (0 to 20) as equalities.

Strand: <u>Shape and Space (Measurement)</u>

General Outcome: Use direct and indirect measurement to solve problems.

Specific Outcomes *It is expected that students will:*	**Achievement Indicators** *The following set of indicators **may** be used to determine whether students have met the corresponding specific outcome.*
1. Demonstrate an understanding of measurement as a process of comparing by: • identifying attributes that can be compared • ordering objects • making statements of comparison • filling, covering or matching. [C, CN, PS, R, V]	➢ Identify common attributes, such as length (height), mass (weight), volume (capacity) and area, that could be used to compare two given objects. ➢ Order a set of objects by length (height), mass (weight), volume (capacity) or area, and explain their ordering. ➢ Compare two given objects, and identify the attributes used to compare. ➢ Determine which of two or more given objects is longest/shortest by matching, and explain the reasoning. ➢ Determine which of two or more given objects is heaviest/lightest by comparing, and explain the reasoning. ➢ Determine which of two or more given objects holds the most/least by filling, and explain the reasoning. ➢ Determine which of two or more given objects has the greatest/least area by covering, and explain the reasoning.

2. Sort 3-D objects and 2-D shapes, using one attribute, and explain the sorting rule. [C, CN, R, V]	➢ Sort a given set of familiar 3-D objects or 2-D shapes, using a given sorting rule. ➢ Choose a single attribute to sort a given set of familiar 3-D objects, sort the set, and explain the sorting rule. ➢ Choose a single attribute to sort a given set of 2-D shapes, sort the set, and explain the sorting rule. ➢ Determine the difference between two given pre-sorted sets of familiar 3-D objects or 2-D shapes, and explain a possible sorting rule used to sort them.

3. Replicate composite 2-D shapes and 3-D objects. [CN, PS, V]	➢ Select 2-D shapes from a given set to reproduce a given composite 2-D shape. ➢ Select 3-D objects from a given set to reproduce a given composite 3-D object. ➢ Predict and select the 2-D shapes used to produce a composite 2-D shape, and verify by deconstructing the composite shape. ➢ Predict and select the 3-D objects used to produce a composite 3-D object, and verify by deconstructing the composite object.
4. Compare 2-D shapes to parts of 3-D objects in the environment	➢ Identify 3-D objects in the environment that have parts similar to a given 2-D shape.