

Kindergarten Outcomes	Grade One Outcomes	Grade Two Outcomes
<p>Number (N)</p> <ol style="list-style-type: none"> Say the number sequence by 1s starting anywhere from 1 to 10 and from 10 to 1. Recognize, at a glance, and name familiar arrangements of 1 to 5 objects or dots. Relate a numeral, 1 to 10, to its respective quantity. Represent and describe numbers 2 to 10, concretely and pictorially. Compare quantities, 1 to 10, using one-to-one correspondence. 	<p>Number (N)</p> <ol style="list-style-type: none"> Say the number sequence, 0 to 100, by: 1s forward and backward between any two given numbers; 2s to 20, forward starting at 0; 5s and 10s to 100, forward starting at 0. Recognize, at a glance, and name familiar arrangements of 1 to 10 objects or dots. Demonstrate an understanding of counting by: indicating that the last number said identifies “how many”; showing that any set has only one count; using the counting on strategy; using parts or equal groups to count sets. Represent and describe numbers to 20 concretely, pictorially and symbolically. Compare sets containing up to 20 elements to solve problems using: referents; one-to-one correspondence. Estimate quantities to 20 by using referents. Demonstrate, concretely and pictorially, how a given number can be represented by a variety of equal groups with and without singles. Identify the number, up to 20, that is one more, two more, one less and two less than a given number. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically by: using familiar and mathematical language to describe additive and subtractive actions from their experience; 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. Describe and use mental mathematics strategies (memorization not intended), such as: counting on and counting back; making 10; doubles; using addition to subtract for the basic addition and subtraction facts to 18. 	<p>Number (N)</p> <ol style="list-style-type: none"> Say the number sequence from 0 to 100 by: 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5 and 10 respectively; 10s using starting points from 1 to 9; 2s starting from 1. Demonstrate if a number (up to 100) is even or odd. Describe order or relative position using ordinal numbers (up to tenth). Represent and describe numbers to 100, concretely, pictorially and symbolically. Compare and order numbers up to 100. Estimate quantities to 100 using referents. Illustrate, concretely and pictorially, the meaning of place value for numerals to 100. Demonstrate and explain the effect of adding zero to or subtracting zero from any number. Demonstrate an understanding of addition (limited to 1 and 2-digit numerals) with answers to 100 and the corresponding subtraction by: using personal strategies for adding and subtracting with and without the support of manipulatives; creating and solving problems that involve addition and subtraction; explaining that the order in which numbers are added does not affect the sum; explaining that the order in which numbers are subtracted may affect the difference. Apply mental mathematics strategies, such as: using doubles; making 10; one more, one less; two more, two less; addition for subtraction to determine basic addition facts to 18 and related subtraction facts.
<p>Patterns & Relations (PR) (Patterns)</p> <ol style="list-style-type: none"> Demonstrate an understanding of repeating patterns (two or three elements) by: identifying; reproducing; extending; creating patterns using manipulatives, sounds and actions. <p>(Variables and Equations)</p>	<p>Patterns & Relations (PR) (Patterns)</p> <ol style="list-style-type: none"> Demonstrate an understanding of repeating patterns (two to four elements) by: describing; reproducing; extending; creating patterns using manipulatives, diagrams, sounds and actions. Translate repeating patterns from one representation to another. <p>(Variables and Equations)</p> <ol style="list-style-type: none"> Describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20). Record equalities using the equal symbol. 	<p>Patterns & Relations (PR) (Patterns)</p> <ol style="list-style-type: none"> Demonstrate an understanding of repeating patterns (three to five elements) by: describing; extending; comparing; creating patterns using manipulatives, diagrams, sounds and actions. Demonstrate an understanding of increasing patterns by: describing; reproducing; extending; creating patterns using manipulatives, diagrams, sounds and actions (numbers to 100). <p>(Variables and Equations)</p> <ol style="list-style-type: none"> Demonstrate and explain the meaning of equality and inequality by using manipulatives and diagrams (0 to 100). Record equalities and inequalities symbolically using the equal symbol or the not equal symbol.
<p>Shape and Space (SS) (Measurement)</p> <ol style="list-style-type: none"> Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight) and volume (capacity). <p>(3-D Objects and 2-D Shapes)</p> <ol style="list-style-type: none"> Sort 3-D objects using a single attribute. Build and describe 3-D objects. <p>(Transformations)</p>	<p>Shape and Space (SS) (Measurement)</p> <ol style="list-style-type: none"> 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. <p>(3-D Objects and 2-D Shapes)</p> <ol style="list-style-type: none"> Sort 3-D objects and 2-D shapes using one attribute, and explain the sorting rule. Replicate composite 2-D shapes and 3-D objects. Compare 2-D shapes to parts of 3-D objects in the environment. <p>(Transformations)</p>	<p>Shape and Space (SS) (Measurement)</p> <ol style="list-style-type: none"> Relate the number of days to a week and the number of months to a year in a problem-solving context. Relate the size of a unit of measure to the number of units (limited to nonstandard units) used to measure length and mass (weight). Compare and order objects by length, height, distance around and mass (weight) using non-standard units, and make statements of comparison. Measure length to the nearest non-standard unit by: using multiple copies of a unit; using a single copy of a unit (iteration process). Demonstrate that changing the orientation of an object does not alter the measurements of its attributes. <p>(3-D Objects and 2-D Shapes)</p> <ol style="list-style-type: none"> Sort 2-D shapes and 3-D objects using two attributes, and explain the sorting rule. Describe, compare and construct 3-D objects, including: cubes; spheres; cones; cylinders; pyramids. Describe, compare and construct 2-D shapes, including: triangles; squares; rectangles; circles. Identify 2-D shapes as parts of 3-D objects in the environment. <p>(Transformations)</p>
<p>Statistics and Probability (SP) (Data Analysis) (Chance and Uncertainty)</p>	<p>Statistics and Probability (SP) (Data Analysis) (Chance and Uncertainty)</p>	<p>Statistics and Probability (SP) (Data Analysis) (Chance and Uncertainty)</p> <ol style="list-style-type: none"> Gather and record data about self and others to answer questions. Construct and interpret concrete graphs and pictographs to solve problems.

**“LOOK FORs” in an Effective Mathematics Program
Kindergarten – Grade 2**

STUDENT ACTIVITIES

Actively engaged in meaningful and quality learning experiences that build on what they know and can do.

<p>Students: (S)</p> <ol style="list-style-type: none"> 1. Have a positive attitude towards math 2. Can articulate the learning outcome being explored 3. Communicate their ideas and understanding using oral language, concrete materials and/or drawings 4. Ask questions and share ideas with the teacher and other students 5. Are appropriately involved in some aspect of the task and are engaged 6. Make connections with math and their experiences 7. Seek assistance when needed 	<ol style="list-style-type: none"> 8. Use a variety of models, manipulatives and technology appropriately 9. Work in groups, pairs, or independently (opportunity for each of these) 10. Use a variety of problem solving strategies: <ul style="list-style-type: none"> - act it out - use a model - draw a picture - guess and check - use a pattern 11. Accept that there are a variety of solution methods: not just one that is “correct”
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TEACHER ACTIVITIES

Observe, record and assess individual and group progress and base instruction on this information as well as curriculum outcomes.

<p>Teacher:</p> <p align="center"><u>Instructional Practices (IP)</u></p> <ol style="list-style-type: none"> 1. Uses a variety of types of lessons that include a balance of student-centred and teacher-directed <ul style="list-style-type: none"> o Shared: working with others o Guided: teacher as facilitator o Independent: by themselves 2. Exhibits a progression of lesson parts <ul style="list-style-type: none"> o Before: warm up, explore ideas o During: deepen understanding o After: share and reflect 3. Focuses instruction on the meaningful development of key mathematical concepts 4. Presents concepts beginning with <u>concrete</u> models (i.e. manipulatives) and then moves toward <u>pictorial</u> and <u>symbolic</u> at an appropriate rate for all to make sense of the math 5. Ensures the balance between developing of conceptual understanding and learning mathematical procedures and “rules” 6. Uses a variety of resources for the delivery of the lesson 7. Uses open-ended questions and problems <ul style="list-style-type: none"> o often more than one method of solving and more than one solution with many entry points 8. Incorporates mental math regularly in lessons 9. Connects lessons to previous learning, real world experiences and other subjects 10. Uses differentiated instruction to meet the needs of all students 11. Looks for opportunities to extend learning beyond math classroom environment 12. Provides appropriate “wait time” for all students to think and respond 13. Reviews previously taught concepts regularly 	<ol style="list-style-type: none"> 14. Focuses on problem solving and communication skills and models this for students 15. Ensures that practice is relevant and appropriate in type and quantity <p align="center"><u>Curriculum Management (CM)</u></p> <ol style="list-style-type: none"> 1. Uses curriculum document: to ensure key skills and knowledge for that grade are being taught 2. Identifies outcome(s) being addressed and teaches these in groups as appropriate 3. Uses a variety of resources to plan, such as: curriculum, core and other resources, technology 4. Ensures instruction is developmentally appropriate: focuses on understanding concepts 5. Makes note of misconceptions and problems students may encounter with concept 6. Writes a clear lesson plan daily and a yearly plan is evident and is adjusted as needed 7. Maximizes use of instructional time <p align="center"><u>Assessment (A)</u></p> <ol style="list-style-type: none"> 1. Uses formative assessment and self-reflection to inform instruction 2. Uses a variety of approaches, including rubrics, conferencing and interviews, observations, journals, self-assessment (“What did I learn?”) 3. Assesses conceptual understanding and skills 4. Circulates throughout the lesson to assist and assess students 5. Ensures homework is meaningful and appropriate 6. Establishes method for recording student performance information 7. Accommodates students’ abilities & learning styles 8. Communicates student progress regularly to parents and students
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**“LOOK FORs” in an Effective Mathematics Program
Kindergarten – Grade 2**

GUIDELINES

The following pages describe what one should observe in classrooms that promote student learning of mathematical concepts and skills.

These “Look Fors” are organized in three categories:

- **Classroom Environment:** that includes... physical organization, mathematical models, and student involvement
- **Student Activities:** that includes... a variety of learning experiences that promote problem solving, reasoning, making connections, and communication
- **Teacher Activities:** that includes... a variety of instructional approaches and assessment strategies used regularly

The purpose of these “Look Fors” is to provide a framework for teachers and schools as a common model for mathematics instruction and to assist administrators in providing specific and valuable feedback to teachers to help implement best practices in mathematics classrooms. The following guidelines are not intended to limit individual teacher’s creativity or to suggest that all mathematics classes should be identical; they are meant to assist teachers in the teaching of math.

CLASSROOM ENVIRONMENT

The teacher created classroom environment has a profound effect on the social, emotional, physical and intellectual development of students.

<u>Social/Emotional (SE)</u> inclusive, engaging, supportive	<u>Physical (P)</u> interactive, intentional, managed
<ol style="list-style-type: none"> 1. Teacher demonstrates that they believe all students can learn math 2. Teacher models a positive attitude and enthusiasm towards math 3. Teacher values and builds upon students’ prior knowledge and makes math relevant to students’ experiences 4. Teacher creates a classroom community that values all contributors; there is an acceptance of alternative approaches and solutions 5. Teacher provides students with choices in support of differentiation: content, process, product 6. Teacher supports students to explore ideas, ask questions, and take risks 7. Teacher shares and displays students’ work and demonstrates a variety of representations 8. Teacher communicates the purpose and value of what students are learning 	<ol style="list-style-type: none"> 1. Teacher arranges furniture so students can interact effectively (partner/small group work) 2. Teacher arranges students in groups that are of an appropriate size and variety to encourage participation by all students 3. Teacher posts curriculum outcome currently being taught 4. Teacher displays words, symbols, calendars, charts, and other math related materials around the room 5. Teacher locates math materials (blocks, cubes, shapes, learning carpets, etc.) in the room for easy access by students 6. Teacher establishes routines for distributing and collecting materials 7. Teacher uses models (manipulatives, etc.) as thinking/learning tools for all students 8. Teacher uses exploratory centres (such as extension activities) to support and further students’ understanding of math 9. Teacher uses technology appropriately to support instruction (calculators, computers, projected displays, SMARTBoards)

