Foundational Frameworks for Curriculum Enhancement for K-3 Mathematics

Essential understandings and common misconceptions

ACTRC

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Contents

Preamble

Part A

The Foundational Understandings and Common Misunderstandings for mathematics are the first output from the program of work that has been undertaken to support the DepEd review of the K-3 Philippine Curriculum and are presented in Part A. This work was undertaken following the Assessment Curriculum and Technology Research Centre (ACTRC) Advisory Board meeting on March 4th, 2020. These Foundational Understandings were designed to be used as a reference for the review of the K-3 Mathematics Curriculum Guides, Teacher Guides and Learner Materials.

The generation of these Foundational Understandings was undertaken in two stages. First, a series of research-based resources that specify mathematics foundational competencies for students in the first four years of schooling were identified. From this research, and a review of Singaporean curriculum documents, a list of possible foundational competencies was generated.

Second, an on-line meeting with academics and curriculum specialists with expertise in the mathematics learning area refined the list of foundational competencies and allocated them to grades from K-3, particularly taking into consideration the multilingual K-3 context in the Philippines. Academics from Australia, Singapore and the Philippines were involved in this stage of the work. The online meeting was chaired and facilitated by Professor Field Rickards. The foundational competencies derived were further modified by incorporating feedback from the academics and curriculum specialists

Part B

The Foundational Competencies for Mathematics in Part B presents what have been identified by the Mathematics Working Group as the **most essential and robust** competencies that support early mathematics development. Elaborations of the essential competencies are presented to support the development of these competencies.

It should be noted that as part of the above process, the current Grade Level Standards for each grade level were not considered as part of this review. They have been inserted for later reference as it may become necessary at a future time, that these Standards are internally reviewed by the Department of Education (DepEd).

Color Guide

The Frameworks in Parts A and B are structured with understandings and competencies grouped according to common functions, as follows:

- Developing Algebraic Reasoning (Number)
- Developing Geometric Reasoning (Geometry: Shape and space)
- Developing Measurement Concepts (Measurement)
- Developing Statistical Literacy (Statistics and Probability)

These groupings are color-coded as outlined below. Grade levels are indicated within each of these groupings of competencies. The competencies to be taught in each of these grade levels are presented according to the grouping.

Color	Competency grouping
Yellow	Competencies that relate to Number
Green	Competencies that relate to Geometry (Shape and Space)
Blue	Competencies that relate to Measurement
Pink	Competencies that relate to Statistics and Probability

Foundational Understandings and Common Misunderstandings

Note: <u>Common misunderstandings</u> are *in **PURPLE***

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
Developing algebraic reasoning	Counting	Count forwards by ones to 20 and backwards from 10	Count forwards by ones from any starting point 1-100 and backwards by ones from any number less than 20	Count by ones (forwards and backwards) from any starting point from 1 - 100 Skip count by 10s from 10, 5s from 5 and 2s from 2.	Count by ones (forwards and backwards) from any starting point from 1 - 1000
		Students find the teen numbers difficult often saying the decade number instead of the teen number e.g. when counting say: eleven, twelve, thirty instead of thirteen *Many students have rote learnt counting backwards from 10 to 1.*	*Initially students counting forwards by ones may say 28, 29, twenty-ten instead of thirty. Sometimes similar difficulty when counting by ones from 39 when they may say 39, thirty-ten instead of 40.* *Many students find counting backwards difficult from 20 as this has not been practiced.*	*When asking students to count forwards from any number check whether they are counting by ones from one silently. That is, they cannot break the sequence of the counting words.* *Many students have rote learnt skip counting by 10s, 5s and 2s. This is evidenced by the way they 'sing' the sequence*	*Many students think the number after 109 is 200 and the number after 199 is 1000.* *When skip counting by numbers other than 10s, 5s and 2s check whether students are 'whisper' counting by ones e.g. when counting by 3s do they say 3, then quietly say 4, 5 then state 6 out loud*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
		Count up to 10 physical objects or 2D representations using the 5 counting principles (stable order, one-to-one correspondence, cardinality, abstraction, order irrelevance)	Count more than 20 objects or 2D representations using the correct verbal sequence and one-to-one correspondence	Count up to 100 objects using a range of strategies other than count all (count by ones starting at one) e.g. grouping, skip counting	Estimate the number of objects in a group where there are more than 100 and use efficient counting strategies to check
		Check the extent of students' one-to-one correspondence and stable order. Are they prepared to count all objects in a collection, or do they ignore certain objects due to their color "I don't like red counters' or type of objects: "I won't count the pigs because I don't like pigs"	*If students give an incorrect response is it because their verbal sequence is incorrect or is it because they are not touching every object (using one-to-one correspondence) but instead waving their hand randomly over the top of the collection of objects.*	*Students who try to count 100 objects using the count all strategy usually find it difficult to keep track of the objects they have counted. Students who place objects in groups of 10 will be more successful.*	*Many students have difficulty estimating the number of objects in a large group as they have not had any experience at estimating. Some will attempt to count these large groups by ones which is very inefficient.*
	Developing place value	Read, write, interpret and order one-digit numbers.	Read, write, interpret and order two-digit numbers.	Read, write, interpret and order three-digit numbers	Read, write, interpret and order four-digit numbers
		Students can read one-digit symbols before they can write the symbols. Many students reverse numbers (up until about 7	*When writing two-digit numbers students confuse numbers such as 13 and 31 because "they both have a 3 and a 1". Similar*	*Many students can read numbers such as 234 (two hundred and thirty-four)*	

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
		years of age) but you can still recognize that a student meant to write 3 even if it is reversed. Check that students can limit or draw or represent the number given e.g. if asked to draw 5 cats do students just keep drawing cats until the space given is full? *Students find it easier to order consecutive numbers rather than randomly chosen numbers.*	*difficulties arise with all the teen numbers.* *Many students do not realize that 26 represents 26 ones, or 2 tens and 6 ones, or indeed 1 ten and 16 ones.*	*but will write the number as it sounds e.g. 200304.* *Check that students order numbers starting with the number in the hundreds place rather than the largest digit in the number.* *Many students struggle to represent or write numbers with 0 in any position of the number.* *Students have difficulties ordering a series of numbers with 0 in any position.*	
	Developing additive thinking	Represent and solve addition and subtraction tasks (up to 10) using concrete materials and pictorial representations presented orally. Introduce addition (+), subtraction (-) and equals (=) signs	Represent and solve worded and symbolic addition and subtraction tasks (up to 20) using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols.	Use mental strategies to solve addition and subtraction tasks (up to 20) and represent these using concrete materials, diagrams and symbols. Encourage students to use fact families or number bonds confidently for totals up to 20 e.g. If I know 6 + 8 =	Use mental strategies to solve symbolic and worded addition and subtraction tasks (up to 100) where the missing information is in different positions. e.g. 6 +? = 14 ? + 9 = 17 6 + 4 = 7 +?

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			Use mental calculation for addition and subtraction (up to 10) Demonstrate understanding of addition, subtraction and equals signs	14 I also know 8 + 6 = 14, 14 – 8 = 6 and 14 – 6 = 8	7 + 5 =? + 4
		For students using the count all strategy by counting each group separately before counting the total number in the whole collection may struggle as their one-to-one correspondence is challenged. For example, for a task such as 6 + 3 = students may count the group of 6, then count the group of 3 before attempting to count the groups of 6 and 3. Any students using this 'triple' count probably won't get the correct response.	*Many students demonstrate language-based errors. e.g. When asked to find the difference between 2 numbers students might look for physical attributes. If asked to state how many objects are left students may choose those on the left-hand side.) How many more…does s/he need? Students may add the two amounts together.* *If given a task such as 6 + ? = 9 students using the strategy of count all will try and add the 6 and the 9. To be successful with 6 + ? = 9 students need to*	*Students need to be encouraged to use related number facts or number bonds. These rely on students understanding that addition is commutative, but subtraction is not and that subtraction is the inverse of addition.* *Students struggle to write the number sentence used to solve a given word problem as they are unsure as to the order of operations. They often write the numbers in the order they are presented in the problem. Some students focus on the key words for the operation/s.*	*Changing the position of the missing information increases the complexity of the task. The easiest task is where students have to add two numbers to get the total. The hardest is where the starting number is unknown.* *Students find tasks such as 6 + 4 = 7 + ? difficult as they think the equals sign indicates the need to give an answer. In this case students will attempt to add the 6, 4 and the 7.*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			be able to count on from 6 keeping track of three counts: six, 7, 8, 9 or they may just know that 6 + 3 is 9. *Some students struggle to write the number sentence when solving one-step word problems. They may try to write these in the order of the written or spoken words e.g. John has 6 less cars than Robert who has 10. How many cars does Robert have?*		
	Moving from additive to multiplicative reasoning	Recognize groups of objects in real-life situations e.g. the number of wheels on 2 cars and make and draw groups of small collections (up to 5) using concrete materials Share small collections of objects using real-life objects e.g. sharing 6 blocks between 2 children	Represent and solve tasks about groups (worded and symbolic) and sharing tasks using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols (up to 20 objects) Introduce the multiplication and division symbols.	Introduce the use of arrays rather than informal groups to demonstrate commutativity of multiplication and the inverse relationship between multiplication and division Demonstrate understanding of the multiplication and division signs in their	Use a range of strategies to solve multiplication and division tasks (<100) including skip counting, fact families, and building on from known facts. Demonstrate automaticity with an increased number of multiplication and division facts

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
				written recording of their solutions to multiplication and division tasks. Explore patterns in skip counting and in the multiplication tables.	
		If students get an incorrect answer it could be because their verbal sequence is faulty, or they do not have one-to-one correspondence for the total number of objects in the collection.	*Many students can respond to symbolic tasks but struggle with worded problems. While 3 x 4 is really 3 groups of/lots of 4 the answer to 3 x 4 is the same as the answer to 4 x 3 however the representations are different.*	*While students can count individual objects in an array, many struggle to count the number of individual squares marked on a grid. The move from an array of individual objects to an area model shown in a grid is a large conceptual leap. Many students need to use the array structure to highlight the link between division and multiplication.*	*While many students can recite the multiplication tables fewer can link these to the division facts. Students need to complete a multiplication grid and learn how to read both multiplication and division facts from this grid. Encourage students to list the multiplication and division fact families or number bonds.*
	Patterns	Identify patterns from their everyday world e.g. color patterns, size patterns, and shape patterns	Recognize, make and draw patterns using combinations of colors, sizes, shapes, or different orientations of the same shape.	Recognize and state the rule for counting patterns	Recognize and state patterns found when using the four computational processes

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
		Some students are unable to identify or describe a simple A B A B pattern using different colored objects of the same size and shape (red, blue, red, blue, …), or the same object but two different sizes (large triangle, small triangle, large triangle, small triangle …) or of two simple shapes (circle, square, circle, square …)	*Some students may be able to identify and describe a pattern from their everyday experiences but may not be able to make or draw a pattern with two or more different colors, shapes, or sizes*	*Students need to record their oral skip counting sequences before they can recognize and describe any patterns in these sequences e.g. "When I count by fives starting at 5 the numbers end in zero or 5 – 5, 10, 15, 20, 25 …*	*Students need to record their responses systematically to the four computational processes* *before they will notice a pattern e.g.* *9 + 1 = 10* *8 + 2 = 10* *7 + 3 = 10* *Students might say something like "If I need to make 10 in different ways – if the first number is one less, then the second number must be one more, so I can still get make 10"*
	Fractions	Recognize one-half of a group, length or area using multiple representations from their everyday life e.g. half a biscuit, Lego.	Find equivalent fractions for one-half, one-quarter, and one-eighth by folding paper strips or paper circles and record these fractions on a number line or the bar model. Find one-half and one-quarter of a group or find	Find equivalent fractions related to one-half, one-third, one-quarter, one-fifth, one-sixth, one-eighth, one-ninth and one-seventh by folding paper strips and record on a number line and Fraction Wall.	Addition and subtraction of fractions that arise in real life contexts and use concrete materials and 2D representations to solve these. Use a range of models and representations to solve fraction word

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			the number in the whole group if given the number of objects representing one-half or one-quarter.	Encourage students to find fractional parts of a collection as well as starting with fractional parts and creating and/or drawing the whole collection	problems e.g. Fraction Strips, Fraction Bars, Area Models, Number Lines Iterate fractional pieces or divide whole lengths or areas and record using diagrams and/or symbols. Order simple fractions on a number line marked initially $0-1$ then change the scale on the number line.
		Students need a stronger understanding that fractions refer to equally divided parts or length. e.g. many students think one- half of a square folded into two equal parts on the diagonal is larger than one-half folded lengthwise.	*Students need lots of experiences with concrete materials. Many students think that one-half of any number of objects is 2 and one-quarter of any group is 4 (whole number thinking).* *Many students think $^1/_4$ is larger than $^1/_2$ as 4 is larger than 2.*	*Check that students are not using the same whole number thinking as in previous column.* *On the Fraction Wall two-thirds is represented by any two of the pieces marked as one-third not the second piece of the row marked in thirds.*	*When students add fractions, many will add the numerators then the denominators e.g. for a task such as $^1/_2 + ^1/_4$ students will write the answer $^2/_6$ but if they use number lines or Fraction strips or Fraction Walls realize the answer is $^3/_4$.*
Developing geometric reasoning	**Space and Shape**	Identify everyday 3D objects and sort according to their attributes	Identify everyday 3D objects and 2D shapes and sort according to their attributes	Identify, name and describe 3D objects in the world around them e.g. cube, cuboid, cylinder and	Classify 2D shapes using a variety of properties

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			Name and describe 2D shapes such as square, rectangle, triangle and circle.	sphere. Recognize both examples and non-examples of regular 2D shapes e.g. recognize that a triangular shaped toy is not a triangle as it has rounded corners.	
		Students will choose cubes or blocks that stack, cylinders and balls that roll and triangular blocks that fit together. Some may not have the correct spatial vocabulary for these 3D objects.	*Many students at this stage relate properties of 2D shapes to real-life objects e.g. they may refer to rectangles as being 'like a door or a book'. They may be able to classify squares, circles, triangles but may include non-examples e.g. a triangular shape with rounded corners may be placed with the triangle group.* *Objects in the environment may be described as 2D shapes e.g. a coin is a circle, while an umbrella and a slice of a pizza are described triangles.*	*Some students may be able to recognize non-regular 2D shapes while others will only be able to choose regular shapes where all sides are the same length e.g. students choose an equilateral triangle but not a scalene one.* *Check that students can name the 2D shapes that form the faces of the 3D objects in their environment.*	*Shapes can be classified using a variety of properties such as number of sides and whether or not the sides are all the same length i.e. they are regular shapes. Check that students can include a range of 4-sided shapes in the group of quadrilaterals not just the squares and rectangles. Similarly, for triangles, pentagons, and octagons.*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			A common misconception is that a 2D shape includes the interior of the shape rather than the outer boundary because they spend a lot of time coloring the inside of 2D shapes		
	Location	Understand terms such as above, below, next to	Follow instructions for moving from one place to another using directional language such as forwards, backwards, to the side, behind, on top of …	Follow simple spoken or written instructions for physically moving from one place to another using directional language such as left, right, forwards, backwards …	Follow (or give) multiple spoken or written instructions for moving from one place to another either physically or on a 2D representation (map), using directional language e.g. go 4 steps forwards then 3 steps to the left then 4 steps backwards.
		While some students appear to follow directions when moving around the classroom check whether they can follow individual instructions as to where to place objects on their desk or on their worksheet.	*As directional language becomes more sophisticated there are students who appear to follow these instructions but are actually just copying the movements of a classmate.*	*Many students have difficulties with left and right. Check that they are aware of the directional language and not confused with terms such as 'left over' when sharing (remainder) or the term 'right' meaning correct*	*Some students find it difficult to follow instructions that include a numerical component. Encourage students to create a path for other students to follow either physically or on a 2D map.*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
Developing measurement concepts	**Time**	Estimate and identify which activity takes a shorter or longer time (e.g. walking or biking to go to school) Sequence events in child's day Correctly sequence the days of the week starting at Monday Recognize the features of a clock	Sequence events in child's week Correctly sequence the days of the week from different starting points e.g. start at Wednesday Read time for hours, half-hours	Sequence the months of the year, know the month after/before Highlight significant events on the calendar Read times to the quarter hour Read time to the 5 minutes	Solve real life problems related to time, duration of time in minutes, hours, weeks
		Some students are unable to order their day's activities while others can sequence their day's activities but struggle with the order for the days of the week. Until they can sequence the days of the week in order, they cannot give the day before or after a certain day e.g. the day before Tuesday is Monday and the day after Wednesday is Thursday.	*Many students rely on their parents or their teachers to tell them the activities for their week. Once students have learnt the days of the week in order check that they can solve problems related to specific activities e.g. "Today is Wednesday and I'm going to grandma's in three days. Which day am I going to grandma's?"* *Check whether students can read o'clock and half*	*Some students need to recite the months in order before working out the month before or the month after.* *Some students have difficulty in identifying the number of days in a specific month, as they believe that all months have 30 days* *Check that students know the months of significant events for them, their*	*While many students can solve real-life problems related to play based activities check that they can solve the duration of school and community-based activities in minutes, hours, weeks and months.* *Some students try to use f base-10 system for conversion of time from hours to minutes e.g. they think that 130 minutes is*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
		Many students cannot accurately draw an analogue clock - big hand, small hand, numbers from 1 - 12 evenly spaced around the clock face.	*past times on analogue clocks and read equivalent times on digital clocks.*	*families and their community.* *Students should be able to read o'clock, half past, quarter to, and quarter past on an analogue clock and the equivalent times in a digital format.*	*the same as 1 hour and 30 minutes.* *Check that students can read all times to the closest five minutes on an analogue and digital clock. Check that they can convert digital representations to analogue and vice versa.*
	Length	Find and compare two familiar objects whose lengths are the same, longer than, or shorter than a given length e.g. Find two leaves that are longer than my leaf.	Estimate and measure lengths of familiar objects using a variety of non-standard units.	Estimate and measure lengths of familiar objects using standard units.	Estimate and measure lengths of familiar objects using appropriate tools (ruler, tape measure). Draw given lengths using a ruler to the closest centimeter. Solve problems using units that are in everyday use such as centimeters, meters and kilometers.
		Some students are unable to compare lengths accurately e.g. by lining up one end of each of the objects	Check that students can measure accurately with non-standard units (icy-pole sticks, unifix blocks, or leaf from garden) making sure they start and finish at the ends of	Check that the rules of accurate measurement are being used. Introduce measures of one meter and one centimeter to use with familiar objects.	*Check that students know how to use a ruler and tape measure correctly. Some students start at the end of the ruler or at the mark given for 1cm.*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
			the object being measured. Do students use multiple copies of exactly the same unit or do they iterate the same unit multiple times? Check there are no spaces left between units as they measure their object.	Consider using a length of 10 centimeters. Do students use the most appropriate measurements for the object they are measuring?	*Some assessment items use a task where students need to find the length of a broken ruler. Many students ignore the context and just record the largest number given on the broken ruler. Sometimes students count all the lines shown on the ruler or tape measure and not the distance between the lines/marks on the ruler.* *When comparing two lengths some students choose the larger number rather than converting both to the same unit e.g. they would say that 200 cm is bigger than 20 m. They add or subtract numbers without considering the units e.g. 200 cm added to 20 m is 220.*

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
	Money	Recognize coins and notes in everyday use. State which coin or note has larger or smaller value.	Count sets of same denomination coins or notes e.g. I have five twenty-peso coins/notes, how much do I have altogether?	Solve real-life money problems that involve giving change.	Solve real-life money problems using all 4 processes - addition, subtraction, multiplication and division.
		While students may be able to name coins and notes, can they place these in ascending or descending order of value? *Could they name a real-life object that could be purchased with each coin or note value or multiples of coins and/or notes?*	*Are students able to provide alternative sets of coins or notes for a particular monetary value?* *Some students think that the set with most coins and/or notes has the largest amount of money while others focus on the color of the notes.*	*Some students may not have access to actual coins or notes at home so these may have to be replicated in the classroom setting. Using money for shopping is a good real-life context for addition and subtraction tasks at this level.*	*Expect students to act out real-life money problems, record on a device then ask them to record either digitally or on paper using words then symbols. Money in the Philippines includes peso (whole number) and centavo (decimal). As decimals are not introduced until upper elementary grades, teachers may need to assist students with conversions.*
	Capacity	Recognize containers that are useful for capacity - cups, jugs, spoons and decide which ones will hold less and which ones will hold more	Estimate and measure one cup, or multiple cups, using real life objects - water, sand, rice.	Estimates which container holds more and checks using real life materials.	Estimates and measures the capacity of objects in real life contexts (cooking) using measuring cups and spoons.

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
					Uses units from everyday life such as liters and milliliters
		Check whether students are using the most appropriate container to complete a task e.g. are they using spoons to fill the jug or are they using cups? Do they realize that the number of times the containers is needed to fill the jug decreases with an increase in the size of the container?	*Check that students can fill a cup or container to the brim rather than just having a lesser amount in the container.*	*Some students make a judgement about which container holds more based on the height or width of the container. They are sometimes surprised when a short fat container holds more than a tall, thin container.*	*Some students can use individual measuring cups or spoons that are labelled e.g. the measuring cup labelled on-half but cannot show one half of a one-cup measure.*
Developing statistical literacy	**Data Collection and Representation**	Create a picture graph where 1 picture represents 1 piece of data to demonstrate some real-life data e.g. the birthdays of the students in the classroom. Answer simple questions about a pictograph that has been created.	Create and interpret a picture graph where 1 picture represents more than one piece of data to demonstrate some real-life data e.g. one picture of an apple represents 2 apples that children brought to school.	Design a question that can be represented by a picture graph or bar graph. Collect data with real world simple surveys. Create and interpret bar graphs.	Interprets the data that are represented in pie graphs, bar graphs and picture graphs, and can decide which representation is most suitable for the task. Depicts information they have collected in the most suitable graph - picture, bar, or pie.

	Mathematical focus	Kindergarten	Grade 1	Grade 2	Grade 3
		At this level teachers will need to assist students with some of the analysis of these pictographs/ picture graphs. Students may be able to see and state that 4 children have their birthdays in April, but the teacher may need to state the total number of students in the class as the students may not have adequate stable order or one-to-one correspondence for this information.	*At this stage most students should be able to interpret the information in a picture graph where one picture represents one piece of information but may struggle where one picture represents more than one piece of data. Success will depend on their ability to skip count.*	*Students find the move from individual objects representing data to a solid bar as in a bar graph as they need to read and interpret the information on both the horizontal and vertical axis. This is related to the difficulty they have with the move from individual objects in arrays to the grid model.* *Students have difficulty in reading and interpreting the data presented in the bar graph. e.g. look at the variation in height of the bar, and do not analyze the scale used*	*While students may find the creation of a pie graph difficult if using tools such as compasses and protractors pie graphs are easily constructed using Excel or creating a pie graph by placing beads on a string to represent the data then joining into circle.* *If asked to choose the representation for their data students will choose the one that they are comfortable constructing.*

Foundational Competencies for Mathematics

Grade Level: Kindergarten

Strand	Essential Competencies	Elaboration of Essential Competencies
Number		
Counting	Develop the correct verbal sequence and count forwards by ones to 10 and backwards by ones from 5 to one	Develop correct verbal sequence: • count forwards by ones to 5 starting at one • count forwards by ones to 10 starting at one • count backwards by ones from 5 back to one • count forwards by ones to 10 starting at any number between 1 and 5
	Use the 5 counting principles (stable order, one-to-one correspondence, cardinality, abstraction, order irrelevance) to count up to 10 physical objects or 2D representations of objects	Accurately count sets of everyday objects or 2D representations of everyday objects • use one-to-one correspondence for quantities up to 5 e.g. the number of hands, the number of candles on a birthday cake, the number of toy cars in the box … • counts up to 5 objects or pictures that are different colors, sizes or shapes e.g. counts up to 5 pieces of fruit not just apples, counts up to 5 colored rocks not just the white ones because they like white, counts up to 5 cats on the page of a story book • answers the question 'how many' without recounting for a set of up to 5 objects or pictures • counts sets of up to 5 objects or pictures from left to right or right to left or randomly Once learners are confident with sets of objects up to 5 increase the number of objects until the learner can accurately count up to 10 objects or pictures
Place value	Develop number sense for one-digit numbers through the use of	Develop number sense about each of the numerals to 5 before moving to 10 e.g. developing the 'fiveness' of 5 where learners recognize that 5 can be represented by 5 fingers or that 5 is one more counter than 4 counters or that 5 is one less counter than 6 counters or is two more than three …

Strand	Essential Competencies	Elaboration of Essential Competencies
	everyday objects or pictures of everyday objects	• Read numerals from 1 - 5 • Write numerals from 1 - 5 • Match numerals to a set of up to 5 objects • Order the numerals from 1 – 5 • Compare two sets of objects (up to 5) and decide whether they have same number of objects or does one have more or less objects • Once learners are confident with sets of objects up to 5 increase the number of objects until the learner can accurately read and write numerals from 1 – 10, match quantities to numerals 1 – 10 and place numbers 1 – 10 in order. • Once learners are confident with sets of objects up to 10 the introduce zero.
Addition and subtraction	Develop early concepts of addition and subtraction related to real life	• Recognize which set of objects has more, or less, objects • Count sets of objects in real-life situations e.g. the number of legs on 2 teddy bears and make and draw groups of small collections (up to 5) using concrete materials • Count the number of objects that are left if one object is removed from a group of objects e.g. I started with five small stones, but I dropped one. I now have four stones.
Patterns	Identify patterns in their everyday world and complete or create their own patterns	• identify patterns from their everyday world e.g. color, size or shape patterns • complete patterns using two colors, sizes or shapes e.g. blue counter, red counter, blue counter, red counter … • create own pattern using two colors, sizes or shapes.

Geometry (Shape and Space)		
Shape	Identify everyday 2D shapes and 3D objects and sort according to their attributes	• Name 2D shapes (e.g. square, rectangle, triangle and circle) found in everyday life and in pictures in books • Sort 2D shapes (square, triangle, circle, rectangles) according to properties such as color, size or shape. • Name 3D objects found in everyday life e.g. box, ball, • Sort everyday 3D objects according to properties such as color, size or function e.g. a ball rolls
Location	Use the language of location to describe their position or an object's position.	• Learners need to develop the language of location to describe either their position or another's position. • Introduce words such as "in," "on," "under," "up" and "down" when talking about everyday objects in their environment or when talking about pictures in a storybook e.g. the cat is on the floor, the toy is in the box, the frog is under the table … • Introduce words of proximity such as beside and between e.g. the boy is beside the tree, the sandpit is between the path and the wall … • Then introduce words related to frames of reference such as in front of, behind, above, below, next to e.g. you are standing in front of the table, the cat is hiding behind the box …
Measurement		
Time	Sequence events in child's day at home and kinder	• Sequence regular events in child's day at home – getting dressed, eating meals, going to bed • Sequence events in child's day at kinder e.g. before lunch we wash our hands, after lunch we have a rest … • Sequence events for the days of the week e.g. on Mondays we have music activities at kinder
Length	Compare the lengths of familiar objects using vocabulary related to length	• Establish initial vocabulary of length – long, short e.g. show me a long piece of string, show me a short leaf, draw a long snake, make me a short caterpillar

		• Find two familiar objects whose lengths are the same
		• Introduce initial comparative language of length – longer, shorter e.g. longer than, shorter than e.g. find me a piece of string that is longer than my piece of string, find me a leaf that is shorter than my leaf.
		• Given familiar objects (leaves, string, blocks) identify those objects whose lengths are the same e.g. can you find a leaf that is the same length as this block.
		• Given two objects identify the object that are longer than or shorter than the other e.g. Here are two sticks. Point to the short stick. Show me the long stick.
Capacity	Compare the capacities of familiar objects using informal units	• Recognize and use containers that are useful for capacity - cups, jugs, spoons during waterplay and play in sandpit. • Recognize that some containers hold more water and sand than others e.g. a cup holds more than a spoon while a jug holds more than a cup … • Recognize that this means that a spoon holds less than a cup, and a cup holds less than a jug.
Money	Recognize that money is used in everyday life.	• Recognize that coins and notes are used in everyday situations e.g. shopping. • Play 'shops' using one coin or one note to buy one product before using more coins or notes.
Statistics and Probability		

Chance	Use chance language to describe everyday events.	• Learners decide what sort of clothes they need according to the weather e.g.
		
		    o I need a raincoat or umbrella as I think it is going to keep raining.
		
		    o I don't have a coat today because the sun is shining, and I think it is going to be very hot.
		
		    o I think we should put all the toys away as it looks like it is going to be very windy.

Data representation	Create a pictograph to represent data where one picture represents one piece of data.	Create a picture graph where one picture represents one piece of real-life data e.g. the birthdays of the students in the classroom, the children's favorite colors

Grade Level: Grade 1

Strand	Essential Competencies	Elaboration of Essential Competencies
Number		
Counting	Develop the correct verbal sequence and count forwards by ones to 100 and backwards by ones from 20 to one	• Check that learners can count forwards by ones from one to ten then start from any number less than 5 and count forwards by ones to 10 • Counts forwards by ones to 12 • Counts backwards by ones from 10 • Gives the number after a given number in the range 1 – 10 e.g. what number comes just after 6? • States the number before a given number in the range 1 – 10 e.g. what number comes just before 9 • Gives numbers between two other numbers in the range 1 – 10 e.g. what number comes between 4 and 6? • Counts forwards by ones to 19 (listen carefully to the 'teen numbers' e.g. are the children saying fourteen or forty?) • Count forwards by ones to 20 • Count forwards starting at any number between 1 and 10 up to at least 20 • Gives the number after a given number in the range 1 – 20 e.g. what number comes just after 13? • States the number before a given number in the range 1 – 20 e.g. what number comes just before 18 • Gives numbers between two other numbers in the range 1 – 10 e.g. What numbers come between 9 and 13? • Counts backwards by ones from 20 or a number less than 20. • Once learners are confident counting forwards and backwards by ones in the range 1 – 20 starting at different numbers within that range move to 1 – 30 then 1- 40 before introducing 1 – 100.

	Use the 5 counting principles (stable order, one-to-one correspondence, cardinality, abstraction, order irrelevance) to count up to at least 20 physical objects or 2D representations of objects	• Accurately counts sets of everyday objects or 2D representations of everyday objects • use one-to-one correspondence for quantities up to 10 e.g. the number of fingers on two hands, the number of children in the sandpit, the number of toy cars in the box … • counts up to 10 objects or pictures that are different colors, sizes or shapes e.g. counts up to 10 pieces of fruit not just the apples, counts up to 10 colored counters not just the red ones because they like red, counts up to 10 farm animals on the page of a story book • answers the question 'how many' without recounting for a set of up to 10 objects or pictures • can count up to 10 objects or pictures from left to right or right to left or randomly • once learners are confident with sets of objects up to 10 increase the number of objects until the learner can accurately count up to 20 objects or pictures paying particular attention to verbal count used to count groups of objects representing the teen numbers.
Ordinal number	Identifies ordinal numbers up to 10th	• identifies the person or object that is first in a line or past a finishing mark e.g. in a running race recognizes the child who came first • identifies the person or object that is last in a line e.g. recognizes that when the toys were placed in a line that the blue teddy was last in line … • identifies ordinal numbers up to 5th • identifies ordinal numbers up to 10th.
Place value	Read, write, interpret and order two-digit numbers.	• Develop number sense and place value about each of the numerals to 20 before moving to 30, then 40 then 100 e.g. recognize that 23 is 23 ones or 2 tens and 3 ones. • Read two-digit numbers • Write two-digit numbers (Check whether learners are incorrectly recording 203 instead of 23 for twenty-three • Match two-digit numbers to a set of up to 20 objects or pictures • Order the numbers from 1 – 20. Learners find it easier to order a set of consecutive numbers (14, 15, 16, 17) than a random set of numbers (6, 9, 12, 17).

		• Interpret the numbers from 10 – 20 as being made of ones and tens e.g. 18 is 18 ones or 1 ten and 8 ones • Once learners are confident with sets of objects up to 20 increase the number of objects until the learner can accurately read and write numerals from 1 – 100, match quantities to numerals 1 – 100 and place numbers 1 – 100 in order.
Addition and subtraction	Represent and solve addition and subtraction tasks (up to 20) using concrete materials and pictorial representations presented orally.	• Represent and solve worded and symbolic addition and subtraction tasks (up to 20) using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols. • Use a range of mental calculations and strategies for addition and subtraction (up to 20) • Demonstrate an understanding of addition, subtraction and equals signs
Multiplication and division	Represent and solve tasks about groups and sharing using concrete materials, 2D representations and symbols (up to 20 objects)	• Represent and solve worded tasks (read aloud by teacher) about groups using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols (up to 20 objects) e.g. Each toy car has 4 wheels. How many wheels are there altogether? • Make small groups of objects using real-life objects e.g. There are 5 teddies how many legs are there altogether? • Introduce multiplication symbol. • Represent and solve tasks about groups (symbolic) using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols (up to 20 objects) • Represent and solve worded sharing tasks (read by teacher) using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols (up to 20 objects) • Share small collections of objects using real-life objects e.g. sharing 6 blocks between 2 children • Introduce division symbol • Represent and solve sharing tasks (symbolic) using concrete materials, 2D representations (drawings, images, stamps, stickers) and symbols (up to 20 objects)

Fractions	Introduce the fraction one-half as being one part of two equal parts or one group of two equal groups.	• Find one-half of a group of objects e.g. find one half of four lollies so two children get equal shares • Find one-half of a length by folding a strip of paper • Find one-half of an area by folding a square, rectangular or circular piece of paper • Start with a collection, length or area that represents the fraction one-half of the original collection, length and area and ask children to show the whole.
Patterns	identify and create patterns from their everyday world using color, size or shape	• identify patterns from their everyday world e.g. color patterns, size patterns, shape patterns • Recognize, make and draw patterns using combinations of colors, or size, or shapes, or different orientations of the same shape. • Complete patterns using two or more colors, sizes or shapes e.g. blue counter, red counter, yellow counter, blue counter, red counter, yellow counter … • Create own pattern using two or more colors, sizes or shapes.
Geometry (Shape and Space)		
Shape	Identify everyday 3D objects and 2D shapes and sort according to their attributes Name and describe 2D shapes such as square, rectangle, triangle and circle.	• Name 2D shapes such as square, rectangle, triangle and circle found in everyday life and in pictures • Draw accurate representations of 2D shapes such as square, rectangle, triangle and circle • Sort 2D shapes (square, triangle, circle, rectangles) according to properties such as color, size or shape. • Name and sort 3D objects found in everyday life according to properties such as color, size or function
Location	Use the language of location to describe or their position or an object's position or follow directions.	• Use the language of location to describe their position or an object's position. • Follow instructions for moving from one place to another using directional language such as forwards, backwards, to the side, behind, on top of … • Give oral instructions for moving from one place to another using directional language such as forwards, backwards, to the side, behind, on top of

Measurement		
Time	Sequence days of week and link to events at home and school. Recognize features of clock and read time	• Correctly sequence the days of the week • Name the day after or day before a given day • Sequence days of week from different starting points e.g. start at Wednesday and place rest of days in order • Connect days of the week to events at both home and school e.g. on Friday I go to swimming • Recognize the features of a clock e.g. draw an analogue clock face • Read time for hours and half-hours e.g. 5 o'clock, half-past two
Length	Measure lengths of familiar objects using a variety of non-standard units	• Use variety of non-standard units to measure the length of familiar objects e.g. the piece of paper is 8 match sticks long or 2 straws long. • Order three or more familiar objects in order from shortest to longest or longest to shortest
Money	Count sets of same denomination coins or notes	In the context of a classroom shop learners count sets of same denomination coins or notes e.g. I have six one-dollar coins/notes. How much do I have altogether? Do I have enough to buy the pen that costs three coins/notes?
Capacity	Measure capacity using familiar containers.	• Measure the amount of sand or water using one or more cups, spoons or jugs. • Calculate how many spoons of sand or water in a cup and how many cups of water and sand in a jug.
Statistics and Probability		
Chance	Use chance vocabulary in everyday situations	• Decide which clothing is appropriate based on weather predictions. • Choose the best outcome in a game.
Data representation	Create and interpret a picture graph where one picture	• Create and interpret a pictograph where one picture represents one piece of real-life data e.g. each drawing of a child represents their favorite color on a pictograph

	represents more than one piece of data	• Create and interpret a picture graph where one picture represents more than one piece of real-life data e.g. one picture of an apple represents 2 apples that children brought to school

Grade Level: Grade 2

Strand	Essential Competencies	Elaboration of Essential Competencies
Number		
Counting	Orally count by ones (forwards and backwards) from any starting point (1 - 100). Skip count by 10s from 10, 5s from 5 and 2s from 2.	• Counts forwards by ones starting at 1 to 100 and counts backwards from 100 to 1 • Count forwards by ones from any starting point from 1 - 100. • Count by backwards by ones from any starting point (1 - 100). • States the number 'before' and 'after' any number from 1 – 100 • States the number 'between' any two numbers from 1 - 100
	Counts up to 100 objects using a range of strategies.	• Counts up to 100 objects using 'count all' method i.e. counts every object by ones starting at one • Counts up to 100 objects using a range of strategies other than 'count all' e.g. group unifix blocks into lengths of 10, bundles icy-pole sticks into groups of 10 then uses skip counting by tens to determine the number.
Place Value	Read, write, interpret and order three-digit numbers	• Reads three-digit numbers written as symbols e.g. 365 is three hundred and sixty-five, 207 is two hundred and seven • Writes three-digit numbers that are spoken or written in words e.g. three hundred and thirteen is written in symbols as 313 (Check that learners are not writing 30013) • interprets three-digit numbers given in symbols or words e.g. 231 is 231 ones/units, 23 tens and one one/unit, 2 hundreds and 31 ones/units and 2 hundreds, three tens and one one/unit • Orders three-digit numbers either smallest to largest or largest to smallest.
Addition and subtraction	Use a range of mental strategies to solve addition and subtraction tasks (up to 20) and represent	• Represent addition and subtraction tasks given either in words using concrete materials, diagrams and symbols.

	these using concrete materials, diagrams and symbols.	• Use mental strategies to solve addition and subtraction tasks (up to 20) and represent these using concrete materials, diagrams and symbols. • Encourage students to use fact families or number bonds confidently for totals up to 20 e.g. If I know 6 + 8 = 14 I also know 8 + 6 = 14, 14 − 8 = 6 and 14 − 6 = 8 I also know that 14 = 6 + 8, 14 = 8 + 6, 6 = 14 − 8 and 8 = 14 − 6
Multiplication and division	Use a range of mental strategies to solve multiplication and division tasks and represent these using concrete materials, diagrams and symbols.	• Use groups of objects to represent multiple small groups of objects e.g. show three groups of 4 circles. • Introduce the use of arrays rather than informal groups to demonstrate commutativity of multiplication e.g. make three rows of 4 counters on a piece of paper. Turn the paper and you can now see 4 rows of 3 counters. • Use arrays to show the inverse relationship between multiplication and division e.g. if I have 3 rows of 5 counters I have 15 counters so I know there are 3 fives in 15. • Use the multiplication and division signs in written recording of solutions to multiplication and division tasks. • Explore patterns in skip counting and in the multiplication tables.
Fractions	Find one-half and one-quarter of a group of objects or folding a length of paper or area of square, rectangle or circle.	• Find one-half and one-quarter of a group of objects or by folding lengths of paper or areas of squares, rectangles or circles. • Find the number in the whole group if given the number of objects representing one-half or one-quarter. • Find the length or area if given length or area of a square, rectangle or circle representing one-half or one-quarter. • Record these fractions or multiples of these fractions on a number line or the bar model.
Patterns	Recognize and state number patterns.	• Recognize and state patterns found when skip counting e.g. When counting by tens starting at 10 all the numbers end in zero.

Geometry (Shape and Space)		
Shape	Identify, name and describe 2D shapes and 3D objects in the world around them.	• Identify, name and describe 3D objects in the world around them e.g. cube, cuboid, cylinder and sphere. • Recognize both examples and non-examples of regular 2D shapes e.g. recognize that a triangular shaped toy is not a triangle if it has rounded corners. It is a triangular shape.
Location	Follow simple spoken or written instructions for physically moving themselves or everyday objects from one place to another.	• Follow simple spoken instructions for physically moving from one place to another using directional language such as left, right, forwards, backwards • Follow simple written instructions for physically moving from one place to another using directional language such as left, right, forwards, backwards • Write simple instructions for someone else to follow as they move from one place to another using directional language such as left, right, forwards, backwards …
Measurement		
Time	Sequence the months of the year and use a calendar. Read times to the quarter hour.	• Sequence the months of the year starting at January. • Sequence the months of the year starting with any month. • State the month after/before a given month. • Highlight and note significant events on the calendar. • Read times on an analogue clock to the quarter hour e.g. a quarter past 3 or a quarter to 6.
Length	Measure lengths of familiar objects using standard unit	• Learn the parts of a ruler e.g. starting point, end point, mark showing the length of one centimeter • Measure lengths of familiar objects using standard unit e.g. centimeters
Money	Solve real-life money problems that involve giving change	• In classroom shop buys and sells items where change is given

Capacity	Decides which container holds more and checks using real life materials.	- Choose the container which holds more and check using real life materials such as sand, rice or water. - Estimate the capacity of a container and check using real life materials such as sand, rice or water. - Finds a different shaped container that learners estimate holds the same amount, less or more and checks using real life materials such as sand, rice or water.
Statistics and Probability		
Data representation		- Design a question that can be represented by a picture graph or bar graph - Collect data with simple surveys - Create pictographs or bar graphs - Interpret pictographs or bar graphs created by others in class.
Chance	Use chance vocabulary in everyday situations	- Decide which clothing is appropriate based on weather predictions e.g. Is rain predicted later in the day so we need coat and/or umbrella? - Choose the best outcome in a game

Grade Level: Grade 3

Number		
Counting	Count by forwards and backwards by ones from any starting point (1 - 1000). Skip count by 10s, 5s and 2s from multiples of those numbers.	• Count forwards by ones from any starting point (1 - 1000) • Count backwards by ones from any starting point (1 - 1000) • Skip count by 10s from multiples of 10 • Skip count by 5s from multiples of 5 • Skip count by 2s from multiples of 2
	Estimate the number of objects in a group where there are more than 100 and use efficient counting strategies to check	• Estimate the number of objects in a group where there are more than 20 then check by counting • Estimate the number of objects in a group where there are more than 50 and check by counting • Estimate the number of objects in a group where there are more than 100 and use efficient counting strategies to check
Place value	Read, write, interpret and order four-digit numbers	• Reads four-digit numbers written as symbols • Writes four-digit numbers that are spoken or written in words • interprets three-digit numbers given in symbols or words in multiple ways • Orders four-digit numbers either smallest to largest or largest to smallest.

Addition and subtraction	Use mental strategies to solve symbolic and worded addition and subtraction	• Use mental strategies to solve symbolic and worded addition and subtraction tasks (up to 20) where the missing information is in different positions. e.g.
		   $6 + ? = 14$
		   $? + 9 = 17$
		   $6 + 4 = 7 + ?$
		   $7 + 5 = ? + 4$

		• Use mental strategies to solve symbolic and worded addition and subtraction tasks (up to 100) where the missing information is in different positions
Multiplication and division	Use a range of strategies to solve multiplication and division tasks	• Use a range of strategies to solve multiplication and division tasks (<100) including skip counting, fact families, and building on from known facts. • Demonstrate automaticity with an increased number of multiplication and division facts
	Order simple fractions on a number line. Addition and subtraction of fractions that arise in real life contexts and use concrete materials and 2D representations to solve these.	• Find equivalent fractions related to one-half, one-third, one-quarter, one-fifth, one-sixth, one-eighth, one-ninth and one-seventh by folding paper strips and recording on a number line and Fraction Wall. • Iterate fractional pieces or divide whole lengths or areas and record using diagrams and/or symbols. • Encourage students to find fractional parts of a collection as well as starting with fractional parts and creating and/or drawing the whole collection • Order simple fractions on a number line marked initially 0 – 1 then change the scale on the number line. • Add and subtract fractions that arise in real life contexts and use concrete materials and 2D representations to solve these. • Use a range of models and representations to solve fraction word problems e.g. Fraction Strips, Fraction Bars, Area Models, Number Lines
Patterns	Recognize and state number patterns	• Recognize and state patterns found in using the four computational processes
Geometry (Shape and Space)		
Shape	Classify 2D shapes using a variety of properties	• Classify 2D shapes using a variety of properties e.g. number of sides, number of parallel sides, number of sides of equal length ….

Location	Follow (or give) multiple spoken or written instructions for moving from one place to another	Follow (or give) multiple spoken or written instructions for moving from one place to another either physically or on a 2D representation (map), using directional language e.g. go 4 steps forwards then 3 steps to the left then 4 steps backwards.
Measurement		
Time	Solve real life problems related to reading of time to the 5 minutes and duration of time in minutes, hours, weeks	• Solve real life problems related to reading of time to the closest 5 minutes • calculate real life problems relating duration of time in minutes, hours, weeks e.g. how much time before my class starts? How many days until my birthday? How many weeks before school starts again?
Length	Estimate and measure lengths of familiar objects using appropriate tools (ruler, tape measure).	• Estimate and measure lengths of familiar objects using appropriate tools accurately (ruler, tape measure). • Draw given lengths using a ruler to the closest centimeter. • Solve problems using units that are in everyday use such as centimeters, meters and kilometers.

Money	Solve real-life money problems.	• Solve real-life money problems using all 4 processes (addition, subtraction, multiplication & division)
		
		    o addition e.g. cost of two or three items
		
		    o subtraction e.g. learners determine the amount of change they should get
		
		    o multiplication e.g. cost of multiple items costing the same per item
		
		    o division e.g. I know the total cost and the number of items so how much did each item cost?

Capacity	Measures the capacity of objects in real life contexts	• Measures the capacity of objects in real life contexts (cooking) using measuring cups and spoons. • Uses units from everyday life such as liters (milk) and milliliters (medicine)

Statistics and Probability		
Data representation	Depicts and interprets data represented in pie graphs, bar graphs and picture graphs, and can decide which representation is most suitable for the task.	• Depicts information learners have collected in variety of graphs - picture, bar, or pie graphs. • Interprets the data that is represented in pie graphs, bar graphs and picture graphs • Decide which representation is most suitable for the data.
Chance	Use chance vocabulary in everyday situations	• Decide whether something is possible or impossible • Recognize when an outcome in a game is fair or unfair.

Appendix

Current Key Stage and Grade Level Standards[1]

Key Stage Standards: K – 3

At the end of Grade 3, the learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to 10,000 and the four fundamental operations including money, ordinal numbers up to 100th, basic concepts of fractions); measurement (time, length, mass, capacity, area of square and rectangle); geometry (2-dimensional and 3-dimensional objects, lines, symmetry, and tessellation); patterns and algebra (continuous and repeating patterns and number sentences); statistics and probability (data collection and representation in tables, pictographs and bar graphs and outcomes)as applied -using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.

Grade Level Standards

Grade Level	Grade Level Standard
Kindergarten	The learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to 20, basic concepts on addition and subtraction); geometry (basic attributes of objects), patterns and algebra (basic concept of sequence and number pairs); measurement (time, location, non-standard measures of length, mass and capacity); and statistics and probability (data collection and tables) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations and decisions in real life.
Grade Level	**Grade Level Standard**
Grade 1	The learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to 100, ordinal numbers up to 10th, money up to PhP100, addition and subtraction of whole numbers, and fractions ½ and 1/4);geometry (2- and 3-dimensional objects); patterns and algebra (continuous and repeating patterns and number sentences); measurement (time, non-standard measures of length, mass, and capacity);and statistics and probability (tables, pictographs, and outcomes) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
Grade 2	The learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to 1 000, ordinal numbers up to 20th, money up to PhP100, the four fundamental operations of whole numbers, and unit fractions); geometry (basic shapes, symmetry, and tessellations); patterns and algebra (continuous and repeating patterns and number sentences);measurement (time, length, mass, and capacity); and statistics and probability (tables, pictographs, and outcomes) as

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[1] The Grade Level Standards listed in this document are the current standards and do not necessarily correspond to the Essential Competencies within this review.

	applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.
Grade 3	The learner demonstrates understanding and appreciation of key concepts and skills involving numbers and number sense (whole numbers up to

10 000; ordinal numbers up to 100th; money up to PhP1 000;the four fundamental operations of whole numbers; proper and improper fractions; and similar, dissimilar, and equivalent fractions); geometry (lines, symmetry, and tessellations); patterns and algebra (continuous and repeating patterns and number sentences); measurement (conversion of time, length, mass and capacity, area of square and rectangle); and statistics and probability (tables, bar graphs, and outcomes) as applied - using appropriate technology - in critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life. |

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