2021

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OPTIMAL LEARNING GUIDELINES:

PRIMARY MATHEMATICS

MINISTRY OF EDUCATION
DIVISION OF CURRICULUM PLANNING AND DEVELOPMENT

CONTENTS

INTRODUCTION 3

LEARNING LOSS 3

REMEDIATION and INTERVENTION 5

ACCELERATED LEARNING 8

DIAGNOSIS 12

DIAGNOSIS: SCHOOL- BASED 14

CLASS: Infant ONE 14

CLASS: Infant TWO 17

CLASS: Standard ONE 20

CLASS: Standard TWO 26

CLASS: Standard THREE 33

CLASS: Standard FOUR 41

CLASS: Standard FIVE 57

CURRICULUM ADAPTATION 67

CLASS: Infant ONE 68

CLASS: Infant TWO 78

CLASS: Standard ONE 94

CLASS: Standard TWO 114

CLASS: Standard THREE 122

CLASS: Standard FOUR 131

CLASS: Standard FIVE 139

References 145

INTRODUCTION

LEARNING LOSS

The term **learning loss** refers to any specific or general loss of knowledge and skills or to reversals in academic progress, most commonly due to extended gaps or discontinuities in a student's education. While learning loss can manifest in a wide variety of ways for a range of reasons, the following are a few representative examples of widely recognized forms of learning loss:

- **Significant vacation break**
- **Interrupted formal education**
- **Returning dropouts**
- **School absence**
- **Ineffective teaching**

https://www.edglossary.org/learning-loss/

For the last two academic years Learning Loss has progressively taken place as more than two thirds of total enrolled learners worldwide have experienced disrupted learning directly and indirectly due to the Covid-19 pandemic. The existing data reveals three possible ways in which learning loss due to this crisis can occur:

1. Reduction in the level of learning

Some researchers and practitioners have agreed that missing school impedes skill improvement, augments the disparity in learning, and therefore leads to the reduction in the learning levels of students

This phenomenon is not new and researchers argue that students' "growth trajectories" would either follow a "melt" path (wherein students "basically gained no ground during the school closures") or a "slide" path (wherein students "lost ground academically during the closures at rates similar to those seen over the long summer break"). Although this observation can be applied to the COVID-19 crisis, the effects from this situation may leave a more negative impact on many parents, who struggle to be breadwinners and teachers for their children while ensuring that they can cope with potential mental and health issues.

2. Unequal levels of learning and exposure to learning opportunities

Even if learning continued through distance modalities, learning loss is still inevitable as several national examinations have been postponed or rescheduled, thereby creating delays or information gaps on student learning advancement without recognising their efforts. This may lead to misinformed or biased decisions on learners' educational progression. Some learners can still obtain the certification or qualification, but their actual knowledge and skills level might not be equal to those of the previous cohorts during the pre-COVID-19 era, or those of the same cohorts who could access online learning facilities and resources.

3. Dropouts

Non-attendance during, and dropouts after, the school closures may cause further learning loss. This is worrying, particularly for the most marginalised or at-risk students, whose learning path is discontinued, leading to limited choices of work options. Even if some students manage to reintegrate into schooling and eventually graduate, they will expectantly plunge into underemployment and unemployment as they graduate into the pandemic.

https://www.ukfiet.org/2020/the-covid-19-induced-learning-loss-what-is-it-and-how-it-can-be-mitigated/

During the pandemic, face-to-face school in Trinidad and Tobago was closed in March 2020. Although some teachers continued teaching via online media, this did not become standardised practice until September 2020. Therefore, students would have lost approximately twelve (12) weeks of teaching time in 2020. In September 2020, remote learning was the prescribed mode of schooling with teachers using a combination of online teaching and preparing printed packages. At this time some students did not have access to devices and/or internet so they may have lost some teaching time due to these issues. Other factors may also be associated with a loss of learning time.

Factors Associated with Loss of Learning

- Students confined to their homes may spend less time in learning than when at school physically
- Students confined to their homes may be stressed and anxious and this may negatively affect their ability to concentrate on schoolwork
- Lack of in-person contact may cause students to be less externally motivated to engage in learning
- Switching to online learning may negatively affect students who have difficulty adapting to this new learning environment
- Switching to remote learning may exacerbate existing educational inequalities due to lack of access to adequate resources, unsuitable
- home environment and parental support
- Isolation from friends and teachers may result in unequal distribution of behavioural and psychological problems

REMEDIATION and INTERVENTION

Intervention and remediation (also commonly referred to as reteaching) have the same fundamental goal: supporting struggling students with focused learning opportunities to achieve academic success. But still, the differences between these two types of instruction are critical to determining what sort of environment, time, and approach might be required to best serve students.

Intervention

Intervention is often identified as a formal process for helping students who are struggling, where research-based instructional approaches are implemented around very specific skill deficits and where progress is regularly tracked. In practice, most schools use intervention to prevent learning gaps from widening in later grades and to identify students for special education referral.

Intervention frameworks are often divided into three sections, where about 80 percent of students are considered Tier 1 and receive core instruction and necessary remediation or reteaching. Tier 2 (5 to 15 percent of students) and Tier 3 (less than 5 percent of students) are then most directly involved in regular small-group or 1:1 interventions. To determine which students, require intervention services, a formalised diagnostic assessment process is often used, during which specific strengths and needs are identified, growth targets are set, and a regimented plan for delivery and progress monitoring is outlined.

Remediation

At a basic level, remediation (or reteaching) means "teaching again" content that students previously failed to learn using a different strategy or resources from before. As a teacher recognises misconceptions or errors in understanding, he or she may quickly redirect students through explicit remediation of that concept. This is done early on and for the benefit of all learners during core instruction in the hope of preventing the majority of students from requiring more targeted, intensive interventions. Many teachers engage in remediation regularly as a natural part of instruction, without using a formal process or even explicitly recognising their actions as intentional reteaching.

Remediation is also often guided by some sort of formative assessment, whether formal or informal, in order to gather enough insight to recognise the large breakdown in knowledge that students are experiencing. For this approach to be impactful, teachers must use a different method to the one initially used—one that builds on previous learning and focuses on the specific omissions in student thinking experienced the first time around. Ideally, remediation or reteaching is done early in the learning process, before additional skills are layered in or more formal mastery tests or summative exams are administered.

When to Employ Each Approach

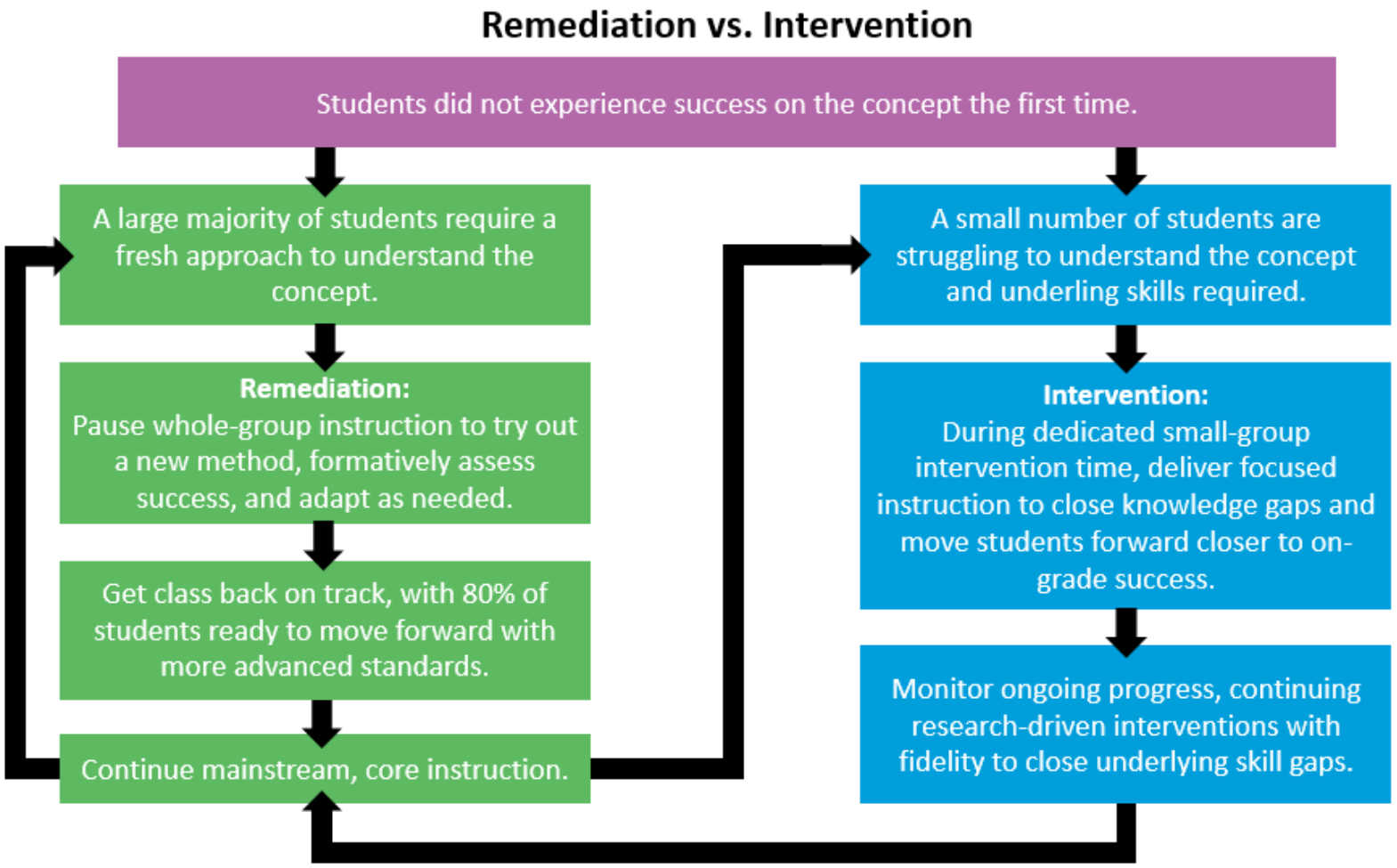
The best educators recognise both intervention and remediation as central to their day-to-day instructional practices. In between delivering core instruction for a specific standard aligned to their explicit scope and sequence, these educators are constantly pausing to

reflect and reteach, while similarly banking in intentional intervention time for those who might be struggling with underlying skills or concepts. This balancing act can often feel like navigating a decision tree but for instruction. Look at the following graphic for one such example.

When you understand the key differences of these instructional approaches and, better yet, the value each one holds, your practices as an educator can become even more intentional. For example, don't spin your wheels organising all students into small groups for an intervention block when only 10 percent of them require this level of focused engagement. Also, don't stop to remediate a concept to the whole class when just a subset of learners would really benefit from a hands-on alternative instructional method to achieve understanding. Knowing what your students need and how to best meet student needs will make for a more balanced learning ecosystem where everyone is receiving the level of services they require at just the right time.

Summary:

- Diagnose to determine deficiencies or gaps in planned learning outcomes
- Quantifying the significance of learning loss in terms of participation levels in each performance band: (suggest: less than 30%, between 31% – 60%, 61% and over.
- Determine approach required for each concept OR each student (significant challenge overall e.g. dropout, disabilities etc.): plenary and/or group sessions. Consider arrangements for intervention where needed.
- Plan for alternative instructional approaches: Review SOW with alternatives, infuse formative assessments, incorporate self-directed learning (use SLMS, repository, online self-directed programs)


Remediation vs. Intervention
Students did not experience success on the concept the first time.
A large majority of students require a fresh approach to understand the concept.
Remediation:
Pause whole-group instruction to try out a new method, formatively assess success, and adapt as needed.
Get class back on track, with 80% of students ready to move forward with more advanced standards.
Continue mainstream, core instruction.
A small number of students are struggling to understand the concept and underling skills required.
Intervention:
During dedicated small-group intervention time, deliver focused instruction to close knowledge gaps and move students forward closer to on-grade success.
Monitor ongoing progress, continuing research-driven interventions with fidelity to close underlying skill gaps.

ACCELERATED LEARNING

Accelerated learning is a multidimensional approach to learning that facilitates the learning of content in a shorter than conventional time taking into account the desired pace of the student. The purpose of this approach is to awaken learners to their full learning ability (Meyer, 2000). Although originally designed to nurture the talents of gifted students by focusing on instructional needs rather than age (Kulik & Kulik, 1984) this approach can be applied to any learner. In this brief acceleration refers to a wide variety of educational and instructional strategies used by educators to advance the learning progress of students who are struggling academically or who have fallen behind (The Glossary of Education Reform, 2013). It is being considered as an alternative approach to remediation for addressing learning gaps and helping students to perform at the expected level for their age and/or class.

Accelerating students as a method of boosting academic achievement is as much a shift in mind-set as it is in instruction. The goal is to review just the critical skills and concepts students need to be successful on learning new concepts. The acceleration approach increases the learning rate by using techniques and practices which seek to enhance the self-esteem of the learner, stimulate intrinsic motivation, and attaches meaning to the content to be learned (Boyes, Reid, Brain & Wilson, 2004).

Acceleration Model

A crucial aspect of the acceleration model is putting key prior knowledge into place so that students have something to connect with new information. Rather than focusing on everything students don't know about the concept, the acceleration model revisits basic skills which can be applied right away with the new content. To prepare for a new concept or lesson, students in an acceleration program receive: (1) instruction in prior knowledge and (2) remediation of prerequisite skills that, if missing, may create barriers to the learning process. This enriching experience includes the following steps:

Step 1: Generate Thinking, Purpose, Real-World Relevance, and Curiosity

One or two days before the regular class begins the concept, acceleration begins with a thought-provoking, hands-on activity that encompasses the big idea of the new topic. Working in small groups or pairs, students explore the new concept by generating their own formulas, developing ideas, discovering patterns, discussing observations, or examining the content's real-world relevance. These activities create value, relevance, and interest and foster both motivation and long-term retention of content.

Step 2: Clearly Articulate the Learning Goal and Expectations, Visualise Big Picture

Students are provided with the concept to be taught and the objectives to be achieved. This helps to clarify for students the progression of learning and how each objective contributes to understanding the big picture of a concept. Providing these patterns for learning allows students to build connections with other learning which leads to improved long-term memory and retrieval.

Step 3: Scaffold and Practice Essential Prerequisite Skills

Moving forward with students in an acceleration model requires teachers to carefully lay out the pieces of exactly what students need to know to learn the new concept at the desired pace. In this step start filling in the high-priority gaps identified by creating scaffolding devices (cheat sheets with examples, rule cards with pictures) to reinforce concepts and providing guided practice to assist students in learning the skills.

It's just as important not to provide too much scaffolding, however; keep tabs on each student's progress to get an idea of when you need to reduce or withdraw support. Scaffolding prerequisite skills in context allows students to realise success on new content.

Step 4: Introduce New Vocabulary and Review Prior Vocabulary

Vocabulary is developed over the course of time and is a key component of prior knowledge. Acceleration students benefit from rich vocabulary experiences which are memorable, hands-on and interactive. An effective strategy for learning vocabulary is to create a growing anchor wall chart that includes vocabulary terms, information on those terms, and pictures of the terms. The chart should start with prerequisite vocabulary and add words as they are introduced. This provides a constant reference point for students. Acceleration gives students a head start on the acquisition of vocabulary before the new concept is introduced.

Step 5: Introduction to the New Concept

Activities pertaining to the new concept are used with the acceleration class so students know something about the topic before it is introduced to the class. These activities will not be duplicated in the regular class because they would lead to boredom for the students from the accelerated class.

Step 6: Conduct Formative Assessment Frequently

The goal of acceleration is to help students learn content in their regular class the first time. It is therefore essential to collect ongoing data of student progress. There should be a continual flow of formative assessment information between the class teacher and the acceleration teacher. Instructional adjustments in acceleration classes are immediate and ongoing based on student data. Students targeted for acceleration have an urgent need for real success right now and as such feedback must be timely and detailed. For that to occur, teachers must use primarily "soft" formative assessment to provide immediate descriptive feedback.

Benefits of Acceleration Approach

- Increased student confidence- students have grasp core concepts and have attained success in classroom activities so they become more confident in their knowledge

- Increased class participation- student have the core concepts and therefore the odds of knowing the correct response to questions has increased so it is safer for them to raise their hands
- Increased interest in learning- student is now learning same materials as peers so they are curious about the new content

Considerations when Designing an Acceleration Program

There are a few logistics to address when implementing an acceleration program.

- Selecting a system for identifying students who would be good candidates for acceleration. Typically, this involves reviewing standardised test data and selecting students who have fallen behind peers in concepts considered to be important for achieving success at the next class-level.
- Deciding who teaches the acceleration classes. The teachers of acceleration classes may be either students' regular subject-area or class-level teachers or separate teachers. When students attend acceleration classes with their regular class teacher, this teacher can make the instructional moves during acceleration to facilitate student success in the regular class. When a separate teacher attends to the acceleration class then there must be continuous communication between the acceleration and class teacher to ensure that instructional moves are aligned with class instruction and the essential prerequisite skills identified.
- Allocating time for acceleration classes. Three options for scheduling acceleration classes:
  - scheduling a short time (around 45 minutes) at the beginning of each day in which all students receive acceleration or enrichment instruction
  - incorporating acceleration into electives, specials, or pullouts where students receive extra instruction in subjects they are experiencing problems
  - self-paced worksheets or online activities and guided practise
- Identifying the most important knowledge and skills students need to achieve class-level proficiency. This involves reviewing the curriculum to identify and prioritise key competencies and concepts that are required at different levels and in a variety of subject areas.

To support schools in addressing the various approaches to addressing Learning Loss as described, details on the following will be provided:

- **GENERAL GUIDELINES FOR DIAGNOSIS:** These guidelines provide an overview of how diagnosis may be conducted with specific reference to the core subjects taught at the primary level.

- **SCHOOL-BASED DIAGNOSIS: CHECKLISTS (ALL SUBJECTS, ALL LEVELS) AND STRATEGIES:** Guidance is provided in the form of checklists, identifying for each core subject, the minimum outcomes students should have acquired in order to proceed to the next learning level. Along with the checklists, suggestions are provided on strategies that can be employed, specific to the subject at each learning level, by teachers in developing the diagnostics. Based on the data derived from the school-developed diagnostics, teachers can then identify gaps or deficiencies, observed for individual students or the entire class and plan accordingly for remediation or intervention, as is relevant.

- **CONDUCT OF DIAGNOSIS AT A NATIONAL LEVEL IN SELECTED SUBJECTS:** National, standardised diagnostics will be developed by the CPDD for English Language Arts and Mathematics but administered and scored by teachers. For primary, these diagnostics will be administered to infants two to standard five (new). The focus for ELA will be oral reading fluency and reading comprehension.

- **EXEMPLARS OF CURRICULUM ADAPTATION:** Having identified the minimum learning outcomes that needs to be developed for students to move to the next learning level, the CPDD will provide an exemplar document which will guide how the curriculum may be adapted for each of the primary levels. Thus, consistent with the minimum outcomes checklist, for each core subject at each learning level (class), guidance will be provided on adaptation of the curriculum, for students to be taught and assessed on, so they are prepared for the next learning level. The adaptations will focus on the minimum competencies for progress from one academic to the next academic year but does not limit the scope of what may be taught. Each teacher, armed with the knowledge of the competencies of the incoming cohort of students, can refer to the adaptations recommended for the current learning level, to prepare their workplans. They can confidently, amend their workplans to respond to the needs of their students and be assured that in the process, as they plan to ultimately have students cover the entire curriculum in readiness for exit examinations, they do so in a systematic and data-informed manner, realistic to their varying contexts but continuing to set high expectations for their students on a foundation of fundamental competencies.

DIAGNOSIS

- Exemplars of adapted curricula is provided for each subject from infant one to standard five, based on minimum learning outcomes to be covered during each academic year
- The utility of the exemplars will depend on the data collected from the diagnostic assessments conducted for each subject.
- The data collected would then guide teachers on how to adapt their workplans/scheme of work accordingly, with guidance provided in the exemplar of form 1 adapted curricula.
- In the case of INCOMING students of infant two to standard five, the preparation of the diagnostic, will be guided by the checklist of content of the previous learning level e.g. infant 2 students will be diagnosed according to the subject checklist for infant 1.
- As the year of instruction proceeds, teachers may then use the year level checklist to conduct ongoing diagnosis to inform remediation or intervention to ensure students are on track with their learning. Thus, for instance, during the year, the infant 1 checklists may then be used to track the current infant 1 students' (who came from ECCE) progress.
- Apart from the data collected from school-based diagnosis, which will be developed to match each school's learning experiences, NATIONAL DIAGNOSIS will be prepared by the Ministry of Education.
- National Diagnosis are planned for English Language Arts and Mathematics and are to be administered to students who have been promoted to infant 2 to standard 5 in September 2021.

GENERAL GUIDELINES FOR DIAGNOSIS

Determining Skills Gaps in Student Learning: Conduct diagnostic testing - this is to be done for each subject. Some examples listed below of each subject area, all of which can be done via any of the online platforms approved by the MOE.

Subject	Diagnostic Strategies
Mathematics	• Conduct a survey test. A survey test can be an end of year test, term test or weekly test that spans the content/skills/outcomes that were addressed during instruction. A survey test can be conducted formally using a pencil or paper test or informally by observation of students' work during Mathematics instruction. • Use the results of the survey test to develop a diagnostic test to determine further, the specific content area and skills in which students' misconceptions are recurring. The content area or skills will be aligned to specific outcomes so these can be noted for each student. • Develop more than one item (2 or 3) for each outcome that will address the hierarchy of skills pertaining to each outcome. • Conduct item analysis and error analysis at each stage of assessment to provide specific details on content/skills in which remediation is required. Error analysis involves the search for patterns among the errors that allows the teacher to further diagnose and determine the skill/s that should be remediated. • Use the data analysis to plan remediation interventions.

DIAGNOSIS: SCHOOL- BASED

CLASS: Infant ONE

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number • Classify objects into groups and subgroups using different criteria. • Use one-to-one correspondence to match objects in sets to determine more than, less than or equal to. • Rote count to 20 in ascending and descending order. • Count objects to demonstrate one-to-one correspondence up to 10. • Connect number names and numerals to quantities up to 10. • Read, write and sequence number names and numerals. • Compare groups of objects and order numbers. • Order objects to describe position (first, second, third and last). • State the equivalence of coins and bills up to 10 cents and 10 dollars. ❑ Addition and Subtraction • Solve one step real-life problems involving addition (concrete and pictorial modes only, no symbol).	• Observation of students as they perform various activities such as classifying objects, matching objects to determine groups of objects with more, less or equal number of objects, rote counting, forming groups of objects to represent numbers, showing equivalence of money, solving addition and subtraction problems using concrete materials, and recording performance on a checklist. • E.g. The student is able to: o Classify objects o Compare groups to determine more, less and same o Rote count to 20 o Represent numbers using counters and pictures • Student demonstrations involving the use of manipulatives and explanations using appropriate mathematical vocabulary such as showing how objects are counted, equivalence of coins and bills and how problems are solved. • E.g. After solving problems in different ways students are encouraged to share their strategies. • Analysis (item and error) of written responses on survey and diagnostic tests to determine mastery and areas of weaknesses and errors. Survey tests can include items such as inserting missing numbers in a sequence of numbers, drawing objects to represent a stated number, writing numbers for groups of objects, matching word names and numerals, labelling the position of objects or persons in a line, circling tall objects. Diagnostic tests are developed via the use of hierarchies.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Solve one step real-life problems involving subtraction (concrete and pictorial modes only, no symbol). ❑ Geometry • Identify solids using informal names. • Identify plane shapes using formal names. • Describe solids and plane shapes using appropriate vocabulary related to geometric attributes (colour, size, shape, position). **Measurement** ❑ Length • Explore concrete materials and describe them using the language associated with length (e.g., long/short, thin/fat, wide/narrow) so as to develop the concept of length. • Compare the lengths of two objects using direct comparison (placing side by side and aligning one end) and explain reasoning, using appropriate vocabulary e.g., longer/shorter. ❑ Mass/Weight • Explore and describe objects using the language associated with	• Analysis of responses to oral questioning noting students' errors such as after viewing a video or performing an activity or interpreting object charts or solving problems. • Analysis of responses in paper and pencil tasks or graded worksheets for example those with problems on addition and subtraction or matching plane shapes with their names or colouring solids. • Interviewing students, for example, to describe the plane shapes and solids that were used to create a model including their positions, to determine their competence in interpreting object charts and to elicit problem solving process and reasoning as students use manipulatives to solve problems, to determine flaws or errors in thinking. Make records of students' mistakes or errors. • E.g. The student is able to answer questions based on object charts: o How many oranges are there? o How many more oranges are there than plums? o Which two fruits are the same in number? o How many fruits are there altogether? o Analysis of students' oral explanations or "think alouds" such as how they solved problems through the use of mental strategies or how they completed activities e.g. which objects are light. • Evaluation of oral presentations or "show and tell" activities such as name and describe shapes to ascertain students' knowledge via the use of checklists. • E.g. The student is able to: o Name daytime activities o Name nighttime activities o Name activities that take a long time o Name activities that take a short time • Analysing journal entries such as "things I do in the morning." • Analysing performance in quizzes such as number before and after.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	mass/weight (e.g., heavy/light) so as to develop the concept of mass/weight. • Compare the mass/weight of two objects (including small heavy objects and big light objects) by hefting, pushing, pulling and explain reasoning using appropriate vocabulary e.g., heavier/lighter. ❑ Time • Describe times of the day (e.g., night-time, daytime, lunchtime) and related activities (e.g., eating breakfast, going to sleep) using appropriate vocabulary. • Describe events/activities that take a long time or a short time. ❑ Statistics • Classify objects into groups and sub-groups using different criteria. • Construct and interpret object chart based on real-life problems or situations. • Make informed decisions based on data analyzed.	• Create a scrap book with cut out pictures of shapes or drawings of shapes with appropriate labels related to name. • Create a story or riddle or song about a shape or a heavy object. • Create a portfolio with "Problems I like to Solve" and explain reasons for selections. • Recording areas of strengths and weaknesses identified by students as they self-monitor. • Analysing performance using online tools such as games, activities and quizzes and videos with questions (e.g., matching games, drag and drop activities) • Observation of students engaged in performance tasks or practical activities and recording knowledge and skills via the use of a rubric or checklist such as comparing the lengths of objects.

CLASS: Infant TWO

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number • Count objects to demonstrate one-to-one correspondence up to 20. • Read and write number names and numerals. • Sequence number names and numerals. • Compare groups of objects and order numbers. • Order objects and use appropriate language to describe position up to tenths. • State the equivalence of coins and bills up to 20 cents and 20 dollars. • Explore patterns using repetition of 2 to 4 elements. ❑ Addition and Subtraction • Solve real-life problems involving addition and subtraction (concrete, pictorial and symbolic modes). • Solve problems presented in horizontal and vertical arrangements. ❑ Mental Mathematics • Solve problems using mental strategies such as: addition and subtraction facts, add one and subtract one as it relates to forward	• Observation of students as they perform various activities such as classifying objects (e.g. solids)/pictures/data, matching objects to determine groups of objects with more, less or equal number of objects, forming groups of objects to represent numbers, showing equivalence of money; and recording performance on a checklist. • Student demonstrations involving the use of manipulatives and explanations using appropriate mathematical vocabulary such as showing how objects are counted, equivalence of coins and bills and how problems are solved. • Analysis (item and error) of written responses on survey and diagnostic tests to determine mastery and areas of weaknesses and errors. Survey tests can include items such as inserting missing numbers in a sequence of numbers, drawing objects to represent a stated number, writing numbers for groups of objects, matching word names and numerals, labelling the position of objects or persons in a line, ordering objects according to length, matching pictures of solids to their names and interpretation of calendars. Diagnostic tests are developed via the use of hierarchies. • Analysis of responses to oral questioning noting students' errors such as after viewing a video or performing an activity or interpreting calendars and picture charts. • Analysis of responses in graded worksheets for example those with problems on addition and subtraction. • Interviewing students to elicit problem solving process and reasoning to determine flaws or errors in thinking. Make records of students' mistakes or errors.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	and backward counting, add zero and subtract zero, count on/back ❑ Geometry • Describe solids and plane shapes using appropriate vocabulary related to geometric attributes (size, shape, position, colour, ability to roll, stack and stand). • Identify solids using formal names. • Construct models using solids and plane shapes and describe composition of the model. • Recognize and name solids/plane shapes from pictorial representations. • Classify solids and plane shapes and give reasons for classification. • Compare solids and plane shapes by stating similarities and differences. • Explore and create patterns using solids and plane shapes (repeating 2 to 4 elements). **Measurement** ❑ Length • Compare and order the lengths of three or more objects using direct comparison, and explain reasoning using appropriate vocabulary e.g., longer/shorter.	• Analysis of students' oral explanations or "think alouds" such as how they solved problems through the use of mental strategies or how they completed activities e.g. which objects are light. • Evaluation of oral presentations or "show and tell" activities such as name and describe shapes to ascertain students' knowledge via the use of checklists. • Analyzing journal entries such as "things I did last month." • Analyzing performance in quizzes such as number before and after. • Create a scrap book with cut out pictures of shapes or drawings of shapes with appropriate labels related to name. • Create a story or riddle or song about a shape or a heavy object. • Create a portfolio with problems I like to solve. Recording areas of strengths and weaknesses identified by students as they self-monitor. • Analyzing performance on online tools such as games, activities and quizzes and videos with questions (e.g., matching games, drag and drop activities). • Observation of students engaged in performance tasks or practical activities and recording knowledge and skills via the use of a rubric or checklist such as comparing the lengths of objects and using arbitrary units.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Measure lengths and distances using arbitrary/non-arbitrary units. • Order objects and distances according to length. ❑ Mass/Weight • Compare objects according to mass/weight using an equal arm balance and appropriate vocabulary. • Use pictorial representations of equal arm balances to determine which object is heavy or light. ❑ Time • Sequence activities or events according to time of occurrence. • Interpret calendars. ❑ Statistics • Collect and classify data to make decisions based on a real-life situation or problem. • Construct picture charts (with and without grid, vertical and horizontal arrangements) based on real-life problems or situations. • Interpret picture charts based on a real-life problem or situation.	

CLASS: Standard ONE

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number • Count objects up to 100. • Read and write number names and numerals to 100. • Sequence number names and numerals. • Insert missing numbers on a number line, number chart and number sequence. • Skip count in ascending and descending order in 2s, 5s and 10s. • Describe the order or relative position of objects using ordinal numbers up to 10. • Explore the value of coins and bills/notes (up to $100) and their equivalence (practical situations). • Use money notation for dollars and cents. ❑ Place Value • Develop an understanding of place value up to 99 (concretely, pictorially and symbolically). • Write numbers using expanded notation.	• Observation of students as they perform various activities such as classifying objects (e.g. solids)/data, forming groups of objects to represent numbers, showing equivalence of money, solving addition and subtraction problems using concrete materials, constructing plane shapes and using arbitrary units; and recording performance on a checklist. • E.g. The student is able to: ○ Represent numbers using base ten materials ○ Create solids using plane shapes ○ Measure lengths of objects using non-standard units ○ Create repeating/increasing patterns • Student demonstrations involving the use of manipulatives and explanations using appropriate mathematical vocabulary such as showing equivalence of coins and bills, equality via balance activities and how problems are solved and how patterns are created. • E.g. The student is able to: ○ Use manipulatives (including counters, the hundred chart and number line) and cut-outs of numbers to show increasing patterns ○ Describe increasing patterns by stating the pattern rule ○ Extend increasing patterns ○ Identify missing elements in patterns ○ Explain observed errors in patterns • Analysis (item and error) of written responses on survey and diagnostic tests to determine mastery and areas of weaknesses and errors. Survey tests can include items such as inserting missing numbers in a sequence of numbers, drawing objects to represent a stated number, writing numbers for groups of objects, matching word names and numerals, labelling the position of objects or persons in a line, ordering

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Compare and order numerals up to 99. ❑ Number Patterns and Relationships • Explore patterns using repetitions of 3-5 elements. • Explore increasing patterns up to 100. • Use balance activities to demonstrate equality and inequality. • Count objects in sets to demonstrate equality and inequality. • Use the equal sign to record equivalent number relationships. ❑ Addition and Subtraction • Solve real-life problems (concrete, pictorial and symbolic modes) involving addition and subtraction. • Explain or demonstrate how an answer was obtained when solving problems. ❑ Multiplication and Division • Solve real-world problems involving repeated addition (multiplication) and repeated subtraction (division).	objects according to length or mass/weight, matching pictures of solids to their names and interpretation of calendars. Diagnostic tests are developed via the use of hierarchies. • Analysis of responses to oral questioning noting students' errors such as after viewing a video or performing an activity or interpreting calendars and pictographs and solving problems. • E.g. After solving problems in different ways students are encouraged to share their strategies and explain each step in the process. • Analysis of responses in paper and pencil tasks and graded worksheets for example those with problems on addition and subtraction and multiplication and division and incomplete patterns. • Interviewing of students for example, to describe and compare plane shapes and solids, to determine their competence in interpreting pictographs and to elicit problem solving process and reasoning as students use manipulatives to solve problems, to determine flaws or errors in thinking and to determine understanding of value and place value (Teacher can present a 2-digit number, such as 46 and have students explain the value and place value of each digit using base ten materials inclusive of place value mats, to support their explanations). Make records of students' mistakes or errors as well as what they have mastered. • E.g. The student is able to: o Use materials to represent a number o Explain the value and place value of the ones digit o Explain the value and place value of the tens digit o E.g. The student is able to answer questions based on pictographs: o How many students liked vanilla ice-cream? o How many more students preferred strawberry than coconut ice-cream o Which two flavours were liked by the same number of students?

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Solve problems involving repeated addition (concept of multiplication, no symbol, up to 10 addends). • Solve problems involving sharing and grouping (concept of division, no symbol). • Explain or demonstrate how answers were obtained when solving problems. ❑ Mental Mathematics • Use a variety of mental math strategies to solve problems involving addition and subtraction, e.g., add 2/subtract 2, ten facts, related addition and subtraction facts, count on and back, skip counting. ❑ Geometry • Classify, describe, compare and name solids and give reasons for classification (cube, cuboid, cylinder, cone, sphere and pyramid – with a focus on naming the different types of pyramids). • Describe and compare plane shapes.	○ How many students are there altogether? • Analysis of students' oral explanations or "think alouds" such as how they solved problems through the use of mental strategies or how they completed activities e.g. which objects are light. • Evaluation of oral presentations or "show and tell" activities such as name and describe shapes to ascertain students' knowledge via the use of checklists. • E.g. The student is able to: ○ Name solids and plane shapes ○ Describe solids and plane shapes ○ Compare solids and plane shapes • Analysing journal entries such as "my patterns." • Analysing performance in quizzes such as number before and after and mental maths. • Create a scrap book with cut out pictures of shapes or drawings of shapes with appropriate labels related to name. • Create a story or riddle or song about a shape. • Create a portfolio with "Problems I like to Solve" and explain reasons for selections. • Recording areas of strengths and weaknesses identified by students as they self-monitor. • Analysing performance using online tools such as games, activities and quizzes and videos with questions (e.g., matching games, drag and drop activities). • Observation of students engaged in performance tasks or practical activities and recording knowledge and skills via the use of a rubric or checklist such as comparing the lengths of objects and using arbitrary units. • E.g. The student is able to: ○ Use arbitrary units without leaving gaps or overlapping

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Use plane shapes to create solids and state the relationship between solids and plane shapes. • Construct plane shapes and compare and describe their sides and corners and deduce the relationship between the number of sides and corners of plane shapes (not limited to triangles, squares and rectangles). ❑ Geometrical Patterns • Recognize, complete and create patterns using solids or plane shapes (repeating – 3 to 5 elements, growing or increasing and decreasing patterns). **Measurement** ❑ Linear • Measure, record, compare and order length using non-standard units. • Compare and order objects and distances according to length (ascending and descending order). • Solve practical problems involving length. ❑ Mass/Weight • Measure, record, compare and order mass/weight, using non-	○ Measure the length of objects • Compare and order objects according to length

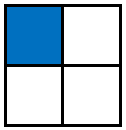
Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	standard units and an equal arm balance (ascending and descending order). • Solve practical problems involving mass/weight. ❑ Time • Measure, record, compare and order duration of activities (time) using non-standard and standard units. • Identify the features of the analog clock and the function of its parts. • Measure the duration of events in minutes and seconds. • Solve practical problems involving time including the interpretation of calendars. ❑ Capacity • Classify objects into groups of given criteria associated with capacity. • Use comparison vocabulary to compare the capacity of two objects (direct comparison). • Measure, record, compare and order capacity using non-standard units. • Solve practical problems involving capacity.	

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	❑ Statistics ❑ Tally Charts and Pictographs • Collect data (using observation and frequency counts) and classify data through investigation of a problem/question based on a real-life situation. • Construct tally charts and pictographs using appropriate symbolic representations. • Identify features of tally charts and pictographs (e.g., using one stroke/tally mark or picture to represent one person, grouping of strokes/tally marks in fives, baseline/start line, labels (of sets) on baseline, same-sized symbols/pictures, equal spacing and title). • Make decisions based on interpretation of data.	

CLASS: Standard TWO

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number • Number Concepts • Develop number sense up to 1 000 with appropriate vocabulary • Skip count in ascending and descending order within a specified amount • Read and write number names and numerals to 1 000 • Match the number names and numerals to the quantities they represent up to 1 000 (concrete and pictorial representations of base ten materials) • Sequence number names and numerals to 1 000 ❑ Place Value and Rounding • Explore the place value of numbers to 999 (hundreds, tens and ones) • Count a specified number of objects and use them to form groups of 100s, 10s and 1s • Develop an understanding of rounding to tens and hundreds and rounding to the nearest dollar • Round numbers to the nearest ten or hundred ❑ Number Patterns	• ***Interview***, e.g. • Have the student ○ Count on in 2s from 51 to 75 ○ Count on in 3s from 6 to 24 ○ Count on in 10s from 61 to 111 ○ Count on in 25s from 50 to 200 ○ Count back in 100s from 975 to 75 ○ Count back in 50s from 200 to 0 ○ Count back in 2s from 99 to 81 • The student is able to ○ Count on in 2s ○ Count on in 3s ○ Count on in 10s ○ Count on in 25s ○ Count back in 100s ○ Count back in 50s ○ Count back in 2s • ***Interview***, e.g. ○ Present students with a 3-digit number e.g. 376. Have them explain the value of each digit using base-10 materials or their own representations to support their explanation. • The student is able to ○ use materials to represent a 3-digit number ○ explain that the first digit represents 3 hundreds ○ explain that the second digit represents 7 tens ○ explain that the third digit represents 6 ones • ***Pencil and Paper Task*** e.g.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Develop algebraic thinking (number patterns and number relationships) • Describe and extend simple number patterns that increase or decrease • Recognize when an error occurs in a pattern and explain what is wrong ❑ Number Relationships • Determine whether two sides of a given number sentence are equal (=) or not equal (≠) using manipulatives, drawings and counting • Count objects in sets to demonstrate equality and inequality of sets • Use the equal sign to record equivalent number relationships e.g. 6+4=7+3 • Use the unequal sign to record number relationships that are not equivalent e.g. 3+2≠1+6 ❑ Addition and Subtraction • Perform addition and subtraction using the algorithm • Perform addition (up to 3 addends) and subtraction (up to 999) using the algorithm • Solve real-life problems (concrete, pictorial and symbolic modes, including money) involving addition and subtraction • Solve one-step and two-step real-life addition and subtraction problems ❑ Multiplication and Division	○ Present students with a variety of increasing and decreasing patterns including some with errors. Have them identify the rule used to create and extend the pattern. Also, have students identify the patterns with errors and explain the errors. • The student is able to ○ explain how the pattern increases/decreases ○ extend the pattern ○ fill in the missing element ○ identify errors in the pattern ○ explain errors in the pattern • ***Pencil and Paper Task*** e.g. ○ Ask students to solve real-life addition, subtraction, multiplication and division problems in two different ways. Have students share their strategies. • ***Stimulate discussion*** by asking: ○ What other strategy could be used to solve the problem? ○ Which strategy is easier to use? Why? ○ Will the strategy work for other problems? Can you prove it? ○ Which strategy do you prefer? Why? • Use students' responses to determine which strategies they know and whether they can: ○ identify problem situations that require addition/subtraction/repeated addition (multiplication)/sharing and grouping (division) ○ determine the correct sum (up to 999) of up to 3 addends using the algorithm ○ determine the correct difference between 2 numbers (with minuend up to 999)

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Solve one-step real-life multiplication and division Problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) • Solve one-step real-life problems involving repeated addition • Solve one-step real-life problems involving sharing and grouping ❑ Mental Mathematics • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving the four operations ❑ Fractions • Develop an understanding of fractions using area models • Identify wholes and parts of wholes • Differentiate between equal and unequal parts of the whole • Become aware of the names associated with fractions to tenths using area models • Name and record fractions using words and symbols ❑ Geometry ❑ Solids and Plane Shapes • Develop spatial sense in relation to solids and plane shapes • Classify, describe, compare and name solids and give reasons for classification (cube, cuboid, cylinder, pyramid, cone,	○ use more than one strategy to solve real-life ○ solve one-step/two-step real-life addition/subtraction problems ○ solve one-step real-life repeated addition/sharing and grouping problems • ***Pencil and Paper Task*** e.g. ○ Write the fraction of the shape below that is shaded and unshaded.  shaded _____ unshaded _____ ○ A fraction has a numerator of 2 and a denominator of 5. Draw a picture to show it. Write the word name of the fraction. • The student understands that ○ the denominator represents the total number of equal parts that the whole is divided into ○ the numerator represents the number of parts being focused on • ***Performance Task*** e.g. ○ Give students a small group of regular solids ○ Have them classify the solids according to two attributes and state their sorting rule ○ Sort a set of solids into two groups. Have students state the sorting rule • The student is able to ○ classify a collection of solids according to two attributes

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	sphere and triangular-based prism – with a focus on the triangular-based prism) • Identify the plane shapes or faces of the triangular-based prism and create triangular-based prisms and other solids using plane shapes. ❑ Recognize spatial relationships • Explore the properties of solids in terms of faces, edges and vertices and compare and classify solids according to their properties related to faces, edges and vertices (cube, cuboid, cylinder, pyramid, cone and triangular-based prism) • Name plane shapes and solids used to create compound shapes (pictorial representation) and name solids and plane shapes from verbal or written descriptions ❑ Geometrical Patterns • Explore patterns using solids and plane shapes • Describe a given pattern (repeating, increasing or decreasing), determine the pattern rule and extend the pattern using concrete materials or pictorial representation ❑ Measurement ❑ Linear • Apply measurement techniques to quantify measures.	○ state the sorting rule ○ identify the sorting rule of a pre-sorted set • ***Pencil and Paper Task*** e.g. • Present an assortment of solids to students. Have students look at the shapes to help them identify the solids or parts of solids that fit given clues such as: ○ I have six identical faces _____ ○ I am the point where two faces meet _____ ○ I am one face of a cone _____ • ***Observation Checklist*** e.g. ○ Use students' responses to the questions to determine whether further review on the identification and attributes of solids and plane shapes is needed. • ***Performance Task*** e.g. • Give students a set of solids/pattern blocks. Have students ○ create a pattern ○ identify the pattern core ○ label the pattern with letters ○ extend the pattern ○ use the same solids/pattern blocks to make a different pattern • ***Observation Checklist*** e.g. • Observe the students at work ○ How complex is the pattern? (How many elements in the core?) • The student is able to ○ identify the pattern core ○ extend the pattern ○ make another pattern ○ label the pattern with letters

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Use non-standard units for measuring length • Demonstrate the appropriate use of the measuring instrument for length (ruler) • Measure lengths and distances using standard units (metre and centimetre) and record as metres only and centimetres only ❑ Mass/Weight • Apply measurement techniques to quantify measures. • Use non-standard units for measuring mass/weight • Demonstrate the appropriate use of the measuring instrument (such as bathroom scale, equal arm balance) • Measure the mass/weight of objects using the standard unit (kilograms and multiple units of kg) ❑ Time • Apply measurement techniques to quantify measures for time • Tell and record time on digital and analog clocks to the hour, half past the hour, quarter past and quarter to the hour ❑ Capacity • Apply measurement techniques to quantify measures • Use non-standard units for measuring capacity	• ***Performance Task*** e.g. o Give students several objects along with a non-standard unit e.g. paper clips and a standard unit e.g. ruler. Students use both the non-standard and standard units to measure the length and/or height of the objects and record their findings. • ***Observation Checklist*** e.g. • Observe the students as they work • The student o is able measure length and height using non-standard units o is able to measure length and height using standard units o measures from one end to the other without gaps or overlaps o understands that the size of the unit determines the number of units needed • ***Interview*** e.g. • Display the time on a digital clock and ask students to o tell the time shown o show the time on an analog clock and a 24-hour clock o record the time correctly o say whether a digital clock could read 8:75? Why? • ***Anecdotal Records*** e.g. o Use students' responses to the questions to determine whether further review on telling and recording time is needed. • ***Performance Task*** e.g. o Present students with a large container, a small container and a bucket of water. Have students use the small container to measure the capacity of the large container

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Use the standard units (litres) for measuring the capacity of containers ❑ Area • Demonstrate an understanding of area • Touch, colour and cover surfaces to develop the concept of area • Compare and order the area of surfaces using direct comparison • Apply measurement techniques to quantify measures • Measure, record, compare and order area of surfaces using non-standard units • Calculate the area of shapes by counting squares ❑ Statistics ❑ Tally Charts and Block Graphs • Demonstrate an understanding about the features of graphs and charts • Identify features of tally charts and block graphs (e.g. using one stroke/tally mark, grouping of strokes/tally marks in fives, baseline/start line, labels (of sets) on axis, equal spacing, title, scale factors) • Make decisions based on analysis or interpretation of data • Interpret data from tally charts and block graphs based on a real-life problem or situation • Demonstrate the ability to present findings orally or in writing	○ Have students choose from a collection of large containers/small buckets. Give them a 1 litre jug. Ask them to determine the capacity in litres • ***Anecdotal Records*** e.g. • Monitor students' responses to determine whether they can do the following: ○ use a non-standard unit to find the capacity of an object ○ use a standard unit to find the capacity of an object ○ measure correctly (e.g. completely fill the container) ○ read their measuring device correctly ○ record their measurements correctly • ***Interview*** e.g. ○ Present students with three pieces of paper of similar area but different appearance. Have students compare and order the area of the surfaces ○ Have students construct all rectangles that have an area of 24 square units. Use grid paper to record the dimensions of each rectangle • ***Observation Checklist*** e.g. • The student ○ makes correct comparisons ○ places one object on top of the other to measure or dissects one piece of paper to determine if it fits completely on top of the other ○ uses non-standard units of measure to compare ○ names all areas ○ applies an understanding of patterns to solve the problem • ***Journal Entry*** e.g. ○ Present a simple tally chart or bar graph showing the favourite sports played by the students attending a

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Justify decisions made using data collected in writing and/or oral presentations	particular school. Ask students to use the information displayed to write a note to the principal explaining what sporting equipment the school should acquire. • The student o uses both numbers and words to support his/her choices o gives an accurate summary of the findings o presents the findings in a clear, concise manner

CLASS: Standard THREE

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number • Number Concepts • Understand the concept of numbers up to 10 000 • Count forward (count on) and backward (count back) by ones within 10 000 from any given number • Read and write number names and numerals to 10 000 • Match the number names and numerals to the quantities they represent up to 10 000 • Sequence number names and numerals to 10 000 ❑ Place Value and Rounding • Explore the place value of numbers to 9 999 • Show, using various manipulatives (e.g. base ten materials, place value mats) that a given numeral consists of a certain number of thousands, 'hundreds', 'tens' and 'ones' and record as such, e.g. 1 245 = 1 thousand, 2 hundreds, 4 tens and 5 ones. • Develop an understanding of rounding to tens, hundreds and thousands • Round numbers to the nearest tens, hundreds and thousands ❑ Number Patterns	• For all content areas: o Develop survey test and administer to students. o Identify errors made by students. o Develop diagnostic test with the specific content in which the errors are seen and administer to students. Grade questions according to the hierarchy of skills in each content area. o Determine if there are patterns among the errors or random mistakes. o Ask students to give explanations (orally) of how they solve the problems. o Use the information to diagnose the specific Mathematical skills that need remediation. • ***Interview***, e.g. o Give students a 4-digit number such as 2 743. Have them represent the number and explain the meaning of each digit using base ten materials or teacher/student-made representations to support their explanation. • The student is able to o use materials to represent a 4-digit number o explain that the first digit represents 2 thousands o explain that the second digit represents 7 hundreds o explain that the third digit represents 4 tens o explain that the fourth digit represents 3 ones • ***Pencil and Paper Task*** e.g. o Present students with a hundred chart. Ask them to identify an increasing and a decreasing pattern. Have

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Develop algebraic thinking (number patterns and number relationships) • Describe and extend whole number patterns involving the four operations e.g. 1, 6, 11, 16… and patterns involving fractions, by using the pattern rule. • Recognize when an error occurs in a pattern and what is wrong ❑ Number Relationships • Solve number sentences when the unknown is on the left or right side of the equal symbol. • Calculate the unknown in number sentences involving addition, subtraction, multiplication and division of whole numbers and involving one unknown ❑ Whole Number (Operations): ❑ Addition and Subtraction • Solve real-life problems (concrete, pictorial and symbolic modes, including money) involving addition and subtraction • Solve problems involving addition (up to 4-digit numbers with sum less than 10 000) and up to 4 addends and subtraction (with minuend up to 4 digits) ❑ Whole Number (Operations): ❑ Multiplication and Division • Develop and apply procedures to multiply and divide whole numbers to solve problems • Use the algorithm for multiplication and division of whole numbers	them identify the rule used to create the pattern. Challenge them to extend an increasing pattern beyond 100. • The student is able to o identify an increasing pattern on the hundred chart o identify a decreasing pattern on the hundred chart o identify a pattern rule for an increasing pattern o identify a pattern rule for a decreasing Pattern o extend an increasing pattern • ***Pencil and Paper Task*** e.g. • Ask students to solve real-life addition, subtraction, multiplication and division problems in two different ways. Have students share their strategies. Stimulate discussion by asking: o What other strategy could be used to solve the problem? o Which strategy is easier to use? Why? o Will the strategy work for other problems? Can you prove it? o Which strategy do you prefer? Why? • Use students' responses to determine which strategies they know and whether they can: o identify problem situations that require addition/subtraction/repeated addition (multiplication)/sharing and grouping (division) o determine the correct sum (up to 9 999) of up to 4 addends using the algorithm o determine the correct difference between 2 numbers (with minuend up to 9 999) o use more than one strategy to solve real-life

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Solve real-life problems (concrete, pictorial and symbolic modes, including money) involving multiplication and division • Solve real-life problems involving multiplication (up to 2 digit by 2 digit numbers) and division (up to 4 digit divided by 1 digit) ❑ Mental Mathematics • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving the four operations ❑ Fractions • Explore fractions using area, linear and set models • Represent fractions using area, linear and set models. • Name and record fractions using words and symbols • Explore the equivalent relationships between fractions by matching/overlaying different fractional parts related to a common whole and describing the relationship. • Recognize and generate equivalent fractions using a variety of models. • Record equivalent relationships using the equal symbol (and non-equivalent relationships using the not equal to symbol) • Compare and order proper fractions with unlike denominators using equivalent forms. • Differentiate between proper fractions, improper fractions and mixed numbers	○ solve real-life addition/subtraction problems • Use the algorithm for multiplication/division of whole numbers ○ solve real-life multiplication problems (up to 2-digit by 2-digit) ○ solve real-life division problems (up to 4-digit divided by 1-digit) • ***Pencil and Paper Task*** e.g. ○ Allow students to use concrete resources/their own representations to show given fractions using area, linear and set models☐ Administer worksheet with target fraction problems e.g. What fraction of the number of circles is black?  ☐/☐ or _____ (word name) • The student is able to ○ represent fractions using the area model ○ represent fractions using the linear model ○ represent fractions using the set model ○ name and record fractions using words ○ Name and record fractions using symbols • ***Pencil and Paper Task*** e.g. ○ Have students use manipulatives/grid paper/their own representations to show given proper fractions, improper fractions and mixed numbers.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Distinguish between proper, improper and mixed number and convert from one form to another ❑ Geometry ❑ Solids • Develop spatial sense through explorations in relation to solids • Compare and classify solids according to their properties (cube, cuboid, cylinder, pyramid, cone and triangular-based prism) and give reasons for classification • Differentiate between regular and irregular solids • Investigate properties of solids through exploration activities, building of frames and drawing • Construct frames of solids and draw/sketch solids to explore the properties of solids in terms of faces, edges and vertices ❑ Plane Shapes • Investigate properties of plane shapes • Compare and classify plane shapes according to their properties • Differentiate between regular and irregular polygons (triangles, quadrilaterals, pentagons, hexagons, octagons) ❑ Symmetry • Develop an understanding of symmetry	• Administer worksheet on proper fractions, improper fractions and mixed numbers e.g. o What improper fraction is shown below? o What mixed number is shown below?  • Observe students' responses to determine whether they can do the following: o Use concrete objects to represent proper fractions/improper fractions/mixed numbers o Make pictorial representations of proper fractions/improper fractions/mixed numbers o Provide a correct mixed number for an improper fraction • ***Pencil and Paper Task*** e.g. o How are the shapes below the same? How are they different?   o How are the shapes below the same? How are they different?

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Determine the number of lines of symmetry in plane shapes – regular, irregular and curved, and in numerals and letters • Create symmetrical shapes ❑ Measurement ❑ Linear • Explain the need for and the importance of a larger or longer standard unit of measure for length • Explain the suitability of the unit as it relates to the length to be measured • Convert units and sub-units of measures of length • Develop concept of perimeter using regular and irregular shapes • Differentiate between area and perimeter • Count and record the number of units used to measure the perimeter of a shape • Measure and calculate the perimeter of regular and irregular shapes and compare and order ❑ Mass/Weight • Recognize the need for a unit smaller than the kilogram to measure mass/weight • Identify grams as a standard unit for measuring mass/weight and measure mass/weight of objects in grams using a set of scales • Develop measurement sense and apply appropriate techniques when measuring and making comparisons	 • The student o identifies all shapes as solids o identifies specific shapes as regular and irregular solids o identifies specific solids: cube, cuboid and cylinder o identifies the properties of solids: faces, edges and vertices • ***Interview*** e.g. o Have students identify and draw plane shapes that have line symmetry. Have them show the location of the line(s) of symmetry. Have them explain why the shapes are symmetrical. • The student o makes symmetrical shapes o justifies why the shapes are symmetrical o identifies the lines of symmetry • ***Interview*** e.g. o Have students identify and draw plane shapes that have line symmetry. Have them show the location of the line(s) of symmetry. Have them explain why the shapes are symmetrical. • The student o makes symmetrical shapes o justifies why the shapes are symmetrical

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Measure and compare the mass/weights of objects in kilograms and grams • State the relationship between the kilogram and gram and select and use the most appropriate standard unit for measuring mass/weight. ❑ Time • Develop measurement sense and apply appropriate techniques when measuring using instruments • Read and tell time in five-minute intervals on analog and digital clocks • Use the calendar to identify and read dates • Read, interpret and record calendar dates in a variety of formats ❑ Capacity • Develop measurement sense and apply appropriate techniques when measuring capacity • Explain the need for and the importance of a smaller standard unit of measure for capacity • Measure capacity using standard units (litres, sub-units [millilitres]) • Measure the capacity of containers using the litre and the millilitre • State the relationship between the litre and millilitre and convert from one to the other ❑ Area • Develop measurement sense and apply appropriate techniques when measuring and comparing area	○ identifies the lines of symmetry • ***Performance Task*** e.g. • Give students a set of unit squares. Ask them to construct at least three (3) shapes that have: ○ the same area but different perimeters ○ the same perimeter but different areas • ***Pencil and Paper Task*** e.g. ○ Present students with a worksheet containing a variety of regular and irregular shapes drawn on grid paper. Have them order the shapes according to perimeter (form smallest to largest and vice versa) • ***Observation Checklist*** ○ Observe the students as they work • The student ○ is able to create shapes of similar area but different perimeter ○ is able to create shapes of similar perimeter but different area ○ is able to distinguish area from perimeter ○ accurately measures and calculates perimeter of regular shapes ○ accurately measures and calculates perimeter of irregular shapes ○ uses the correct unit to express area ○ uses the correct unit to express perimeter ○ is able to compare and order shapes based on their perimeter • ***Interview*** e.g. • Display the time on analog and digital clocks in five-minute intervals then ask students to

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Explain the need for and the importance of a standard unit of measure for area • Select and use the most appropriate standard unit for measuring area (square centimetre – cm2, square metre - m2) for small and large surfaces • Measure area using standard units (cm^2, m^2) and record measure ❑ Statistics ❑ Tally Charts and Bar Graphs • Demonstrate the ability to collect, classify, organise and represent data • Collect data (using observation and frequency counts) and classify data through investigation of a problem/question based on a real-life situation • Construct tally charts and bar graphs using appropriate symbolic representations • Demonstrate an understanding about the features of graphs and charts • Identify features of tally charts and bar graphs • Make decisions based on analysis or interpretation of data • Interpret data from tally charts and bar graphs based on a real-life problem or situation • Demonstrate the ability to present findings orally or in writing • Justify decisions made using data collected in writing and/or oral presentations	○ read and tell the time shown ○ display the start times and end times of various activities using an analog or digital clocks. • Have students ○ determine the duration of each event ○ compare the duration of different events • Give students a calendar. Ask them to ○ point out the day's date ○ point out their birthday ○ record and explain each date using two formats • The student is able to ○ record calendar dates using one format ○ record calendar dates using two formats ○ justify why the shapes are symmetrical • ***Anecdotal Records*** ○ Use students' responses to the questions to determine whether further review on telling and recording time is needed. • ***Pencil and Paper Task*** e.g. • Sita made a purchase of fabric and paper. She used the fabric to cover a bed and the paper to cover a copy book. What standard unit of measure would be used to express ○ the area of the fabric used? ○ the area of the paper used? • The student selects ○ square centimetre (cm2) for measuring area of the paper ○ square metre (m2) for measuring area of the fabric

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		○ Have students construct all rectangles that have an area of 48 square units. Use grid paper to record the dimensions of each rectangle • ***Observation Checklist*** • The student ○ names all areas ○ applies an understanding of patterns to solve the problem • ***Interview*** e.g. • Present a tally chart depicting the favourite ice cream flavours of a group of children. Ask the following questions: ○ What does the tally chart show? How do you know? ○ Which ice cream flavour is liked more –chocolate or vanilla? How do you know? ○ How many more students liked strawberry than coconut? How do you know? ○ How many children were surveyed? How do you know? • ***Pencil and Paper Task*** e.g. ○ Have students construct a bar graph from the data in the tally chart. • The student ○ describes the data presented in the tally chart ○ answers questions pertaining to the tally chart ○ uses mathematical language correctly ○ constructs a bar graph correctly, including labelling the title and axes

CLASS: Standard FOUR

<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr><td>Mathematics</td><td>❑ Number
• Number Concepts, Place Value and Rounding
• Recognize, represent, model, compare and order numbers up to 1 000 000 with reference to place value.
• Demonstrate an understanding of different types of numbers.
• Develop an understanding of rounding to thousands.
❑ Number Patterns
• Recognize and explore number patterns up to 1 000.
• Develop an understanding of different types of numbers by exploring their patterns.
• Develop an understanding that pattern recognition can aid in problem solving.
❑ Number Relationships
• Solve problems involving number sentences with one unknown
❑ Whole Number (Operations)
• Solve problems using whole numbers involving the four operations.
• Develop and apply mental mathematics strategies to solve problems involving whole numbers.
• Use estimation strategies in problem solving contexts with whole numbers.</td><td><u>Survey and diagnostic tests</u>
Refer to Guidelines for Diagnosis for Mathematics

Samples of other diagnostic strategies:

❑ Number
• <u>Performance Task/Observation/Questioning</u>
• Place Value - Let students use manipulatives such as place value mats and base ten materials (Dienes blocks, money, stick bundles) to represent numerals presented on number cards e.g.
Show the numerals:
a) 1 257
b) 3 092
Create an appropriate checklist to record observations of students' skills.
A sample of a partial checklist for student understanding of Place Value is given here:

<table>
<tr><th>Questions</th><th>Yes</th><th>No</th></tr>
<tr><td>Can the student represent a 4-digit number with base ten materials correctly?</td><td></td><td></td></tr>
<tr><td>Can the student represent a 4-digit number with zero as a place holder?</td><td></td><td></td></tr>
<tr><td>Can the student describe the place value of the digits?</td><td></td><td></td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr><td></td><td>❑ Fractions
• Develop and apply procedures to solve problems involving fractions and the four operations.
❑ Decimals
• Demonstrate an understanding of decimals up to hundredths
• Develop an understanding of the comparison of decimals
• Develop an understanding of rounding to whole numbers and tenths.
• Develop and apply procedures to solve problems involving the addition and subtraction of decimals.
• Use estimation skills to check solutions to problems and determine reasonableness of answer.
❑ Problem Solving
• Solve multistep problems involving whole numbers, fractions and decimals using algorithms, mental strategies and other problem-solving strategies.
• Solve problems involving direct proportion.
❑ Geometry
❑ Solids and Plane Shapes
• Demonstrate an understanding of the properties of solids and plane shapes.
• Solve problems involving solids and plane shapes.
❑ Angles</td><td>
<table>
<tr><td>Can the student describe the value of the digits?</td><td></td><td></td></tr>
</table>

Alternatively, students can create numbers using the base ten materials, then write the corresponding numerals. The activity can be extended pictorially. Use questioning to determine students' thinking with both correct and incorrect responses e.g.
a) Why have you written a '9' in this place?
b) What is the value of the '3'?
c) Why is the zero placed here?

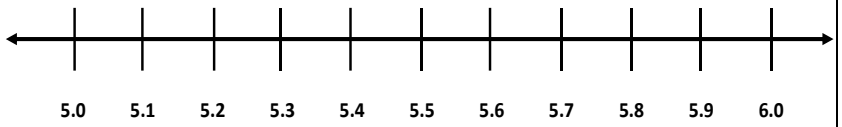
• Decimals – Extend task for whole number to include representing decimals up to tenths then hundredths using the base ten materials e.g.
Show the following numbers:
a) 2.4
b) 30.2
c) 2.58
d) 125.06

Create an appropriate checklist or rubric to record observations of students' skills. A sample of a partial rubric for student's understanding of Decimals is given here.

<table>
<tr><td colspan="2">SKILLS</td><td>Demonstrate an understanding of decimals up to hundredths (focus on tenths)</td></tr>
<tr><td rowspan="2">LEVELS</td><td>1</td><td>Demonstrates understanding of the base ten nature of place value (represents whole numbers only</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr>
<td></td>
<td>
• Demonstrate an understanding of angles.
❑ Triangles
• Demonstrate an understanding of the different types of triangles based on properties of sides and angles.
❑ Measurement
❑ Linear
• Demonstrate an understanding of the relationship between standard units and their sub-parts to solve practical problems involving linear measure.
• Demonstrate appropriate techniques when measuring.
• Solve problems involving linear measure and perimeter.
❑ Mass/Weight
• Demonstrate an understanding of the relationship between standard units and their subparts to solve problems involving mass/weight.
❑ Time
• Accurately read and record time to the minute and solve practical problems involving time.
• Develop an understanding of time schedules.
❑ Volume
• Develop the concept of volume.
• Measure the volume of boxes by stacking and packing cubic blocks into them and counting to determine the volume.
</td>
<td>
<table>
<tr><td></td><td></td><td>using base ten materials on a place value chart.)</td></tr>
<tr><td></td><td>2</td><td>Extends the understanding of the base ten nature of place value to tenths (represents decimal numbers involving tenths using base ten materials on a place value chart) with direct assistance.</td></tr>
<tr><td></td><td>3</td><td>Demonstrates the understanding of decimal numbers involving tenths (represents decimal numbers involving tenths using base ten materials on a place value chart) but inconsistently and inaccurate at times.</td></tr>
<tr><td></td><td>4</td><td>Demonstrates the understanding of decimal numbers involving tenths (represents decimal numbers involving tenths using base ten materials on a place value chart) consistently and accurately.</td></tr>
</table>
Use questioning to determine students' thinking with both correct and incorrect responses e.g. What digit is represented in the tenths position?
• <u>Pencil and Paper Tasks/Worksheets</u>
• Rounding - Create worksheets with questions on rounding to the nearest thousand, ordering numbers in ascending or descending order and distinguishing between factors and multiples. Use item analysis data to determine students' errors. Use questioning to determine students thinking with both correct and incorrect responses. e.g.
</td>
</tr>
</table>

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Compare and order boxes according to their volume. • Understand conservation of volume. ❑ Area • Demonstrate an understanding of area of regular and irregular plane shapes. • Solve problems involving area. ❑ Statistics • Design survey(s) to solve problem(s) that involves the use of statistical data. • Gather, classify, organize and display data using tables, tally charts and graphs (pictographs, block graphs and bar graphs) and interpret results. • Describe methods and analyse results and make decisions. • Communicate findings and decisions made using vocabulary associated with statistics. • Demonstrate an understanding about the features of graphs and charts. • Identify characteristics of tally charts and bar graphs. • Make decisions based on analysis or interpretation of data. • Construct tally charts and bar graphs using appropriate symbolic representations. • Interpret data from tally charts and bar graphs based on a real-life problem or situation. • Make informed decisions on data analysed. • Demonstrate an understanding of mode.	*a) Round 4680 to the nearest thousand. Explain why you gave this answer.* *b) Which of the following is a multiple of 8? A. 28 B. 34 C. 48 D. 54* *c) Why did you choose this answer?* • **Number Patterns** - Create worksheets with graded exercises in number patterns e.g. a) *Find the missing numbers in the number patterns* i. *1 5 9 __ 17 __* ii. *7 14 21 __ __ 42* iii. $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{6}$ ☐ $\frac{1}{10}$ ☐ *b) Find the errors in the patterns. Write the correct patterns.* i. *1 1 3 7 13 20 30* ii. *1 5 25 125 225 1125* • **Decimals (Comparison and Rounding)** - Create or download worksheets with exercises to assess comparison of decimals and rounding to the nearest whole numbers and tenths e.g. *a) Put in > or < to make the statements true.* *4.56* ☐ *4. 65* *b) Round the following to the nearest tenth:* *i) 5. 32* *ii) 14.08* *c) Use the number line to answer the questions.*

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		i. *Write a number which is less than 5.7* ii. *Which number is closer to 6, 5.3 or 5.8?* iii. *Write a decimal number with tenths that is less than 5. (and etc.)*  • ***Use of online tests and worksheets*** Using interactive sites, select items with the relevant content and suitable contexts. Observe students while they work or have students share their screen if they are working remotely. • **Place Value** – e.g. https://www.thatquiz.org/tq-c/math/place-value/ https://www.teacherled.com/iresources/placevalue/placevaluereels/ https://www.teacherled.com/iresources/placevalue/placevalueordering/ • ***Journal Writing Tasks*** • Have **students** write journal entries on various topics. Determine students' knowledge and skills through their writing e.g. *a) Students will explain the pattern of adjacent place value positions, moving from right to left and left to right using a four-digit number e.g. 3 685*

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		b) *Students will describe the meaning of each digit in a numeral.* c) *Students will explain repeating, increasing or decreasing number patterns (whole numbers, fractions, decimals) in writing. They should be able to identify or describe the starting point, pattern rule e.g.* *i. 1, 4, 8, 13, 19* *ii. 0.10, 0.15, 0.20, 0.25, 0.30* • ***Interviews*** • Present problems (on cards) involving four operations to students. Read each problem aloud. Use mathematical expressions or simple one-step word problems at first. Increase the complexity of the skills required, gradually. Ask questions to determine how students solved the problems. Use a checklist or anecdotal records to record the skills student displayed/did not display e.g. • **Addition:** a) *What is 5 + 4 ?* (1-digit and 1-digit, no regrouping) Ask student: *How did you solve it?* (for both correct and incorrect answers). Sample checklist: *Student* o *did not attempt the problem* o *attempted problem but got an incorrect answer* o *solved the problem with manipulatives only* o *used counting on strategy* o *used part-part-whole strategy* o *recalled basic fact*

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		If student got the correct answer move on to another question in the hierarchy of skills for the operation. Increase complexity of skills with other problems e.g. b) *8 + 7* (1-digit and 1-digit, regrouping) c) *24 + 13* (2-digit and 2-digit, no regrouping) d) *25 + 47* (2-digit and 2-digit, regrouping) e) *320 + 16* (3-digit and 2-digit, no regrouping) and etc. Present problems with change unknown and vary in complexity e.g. *a) 45 +* ☐ *= 156* *b) 45 + 72 = 50 +* ☐ • **Fractions** – use the hierarchy of skills for operations e.g. a) *Harry ate* $\frac{2}{9}$ *of the pizza and Sam ate* $\frac{5}{9}$ *of the same pizza. What fraction of the pizza was eaten?* (add fractions with the same denominator) b) $\frac{1}{5} + \frac{7}{10} =$ ☐ (add fractions with one denominator a multiple of the other) c) $\frac{1}{3} + \frac{1}{4} =$ ☐ (add unit fractions with different denominators)

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		Use questioning to determine students' thinking with both correct and incorrect responses e.g. *What digit is represented in the tenths position?* • **Addition and subtraction of decimals -** Use similar strategies as given for whole numbers. • **Problem Solving - Whole Number Operations, Operations with Fractions, Decimals** • ***Online tests*** https://www.mathmammoth.com/preview/tests/End_of_Year_Test_Grade4.pdf https://www.liveworksheets.com/eb1259425ft https://www.iknowit.com/fourth-grade.html • ***Paper and Pencil Tasks/Interviews/Questioning/Journal Writing*** • Present graded one-step and multi-step problems to students and have them solve them using concrete materials or drawings if necessary. Ask questions to determine how students solve problems. You may need to ask follow up questions. Use this approach for both correct and incorrect answers. Record students' responses in anecdotal records or create a checklist of skills e.g. **Problem:** *Ling baked a batch of cookies for a party. Ling's brother ate* $\frac{1}{5}$ *of the batch of cookies at home. Ling took the remaining cookies to the party where her friends ate another* $\frac{7}{10}$ *of the batch of cookies. There were 3 cookies left. How many cookies were in the batch?*

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		Allow students to use fraction boards, circles, towers etc. to work with the equivalent fractions. Ask questions and record students' responses through anecdotal records or designed checklists e.g. o *What is this problem about? (*students can describe/retell problem*)* o *What are we asked to find?* o *What information do we have?* o *Is there missing information? Is there extra information?* o *Can we make a model or draw a diagram to solve the problem? etc.* Use Polya's Problem Solving steps and strategies as a guide to questioning. Ask the necessary follow up questions. • Include journal writing task for example: *Re-write problem in your own words and explain the strategy you selected for solving the problem.* ❑ Geometry • ***Performance Task/Observation/Questioning*** • **Solids and Plane Shapes –** Present students with actual solid shapes – cube, cuboid, cylinder, pyramid, cone and triangular-based prism. Let students examine shapes and then draw faces. Ask questions to determine students' understanding of the properties of the shapes e.g. number of faces, shapes of faces, parallel and perpendicular lines, right angles etc. • **Angles –**

<table>
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<tr><td></td><td></td><td>
a) Have students examine objects around the home or classroom e.g. hands of a clock, door and determine types of angles associated with their turns i.e. whole turn, three quarter turn, half turn, quarter turn. Students can then associate turns with angles – right angle, greater than a right angle, smaller than a right angle.
  
b) Have students model angles using geo-strips or any other suitable manipulatives or objects.
• Triangles (Classifying) – Give students a set of triangles to sort into groups. Students can match triangles directly or use a grid to compare them. Have students explain their rule for sorting. Ask appropriate questions to determine students' understanding of the properties of triangles (angles and sides).
Create an appropriate rubric to record observations of students' skills.
A sample of a partial rubric is given here:
<table>
<tr><td>SKILLS</td><td>Knowledge and Understanding:
Demonstrates understanding of angles by recognizing them in solids and plane shapes and classifying them according to size of turns.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td rowspan="4">LEVELS</td><td>1</td><td>Recognises turns in solids and plane shapes inconsistently</td></tr>
<tr><td>2</td><td>Recognises turns in solids and plane shapes but is unable to classify size of turns.</td></tr>
<tr><td>3</td><td>Recognises turns in solids and plane shapes but inconsistently classifies size of turns correctly.</td></tr>
<tr><td>4</td><td>Recognises turns in solids and plane shapes and consistently classifies size of turns correctly.</td></tr>
</table>

<u>Use of online tests, games and/or worksheets</u>
Use interactive sites/games and observe students while they work or have students share their screen if they are working remotely. See example below.

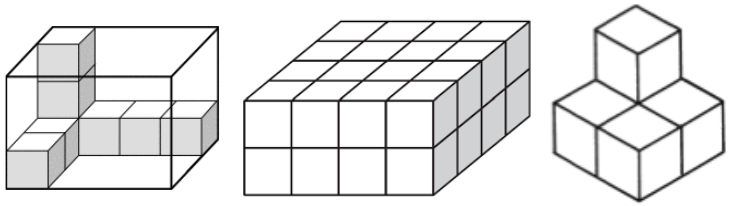
https://www.iknowit.com/lessons/d-geometry-solid-shapes-3d.html

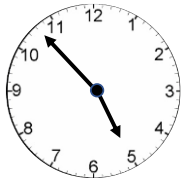
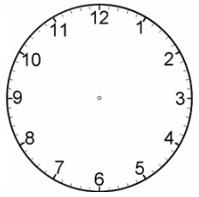
❑ Measurement:

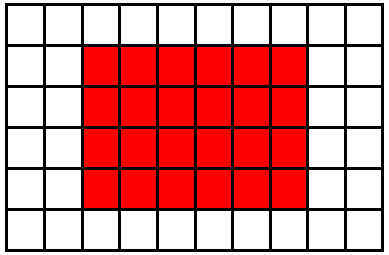
<u>Performance Task/Observation/Questioning</u>
Linear – Have students measure the lengths of appropriate objects and express lengths in millimetres. Create an appropriate checklist to record observations of students' skills e.g.

edge of the ruler is aligned to the object
end of object is placed at 0 mark of the ruler
the number on the ruler at the other end of the object is correctly identified and recorded
correct unit (mm)is used

</td></tr>
</table>

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		Extend the activity to objects placed at other points on the ruler and have students record lengths. Use pictorial representations (worksheet) next to further determine students' skills. • **Volume–** Have students pack cubes of the same size in boxes then count cubes to determine their volume. Students will record their results. Extend the activity to include construction of models of cubes and cuboids, counting the cubes and recording the volume. Extend further to construction of other models (e.g. missing cubes from cuboids). Use pictorial representations (worksheet) next to further determine students' skills.  Create an appropriate checklist to record observations of students' skills. • ***Paper and Pencil Tasks/Interviews /Questioning/Online Tests*** • **Time** - Create or download worksheets or with questions based on telling time to the minute ("to" and "past") and solve simple one-step problems involving elapsed time e.g.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		a) *i. Write the time shown on the clock.* (students can write in words, then express time as digital)  *ii. Draw hands on the clock to show 8 minutes past 7.*  b) *Jan put a cake to bake in the oven at 10:43 a.m. and took it out at 11:12 a.m. How much time did the cake need for baking?* c) *Paul's online class started at 9:32 a.m. The class was 45 minutes long. At what time did the class end?* Use online tests and select relevant items. Observe students while they work or have students share their screen if they are working remotely. Examples are given here: https://uk.ixl.com/maths/time https://www.k5learning.com/free-math-worksheets/fourth-grade-4/word-problems/time

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		• **Area** Have students draw shapes of given areas on grids and express answers in square units e.g. a)  b) Ask questions to determine students' understanding of area and record students' responses through anecdotal records or design appropriate checklists or rubrics to assess students' knowledge and skills. c) Create or download worksheets (appropriate content and graded) to assess problem solving involving area. ❑ Statistics • ***Performance Task/Observation/Questioning*** • **Data collection, organization and display of data** a) Have students design and conduct simple surveys in their class or school e.g. o Student Attendance o Favourite Sport o Favourite Food b) Students will then classify, organize data and display data in tables and/or tally charts.

<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr><td></td><td></td><td>
c) Students will represent data on graphs (pictographs, block graphs or bar graphs) using appropriate scale factors e.g.

Favourite Sport
<table>
<tr><th>Sport</th><th>Number of Children</th></tr>
<tr><td>Badminton</td><td>38</td></tr>
<tr><td>Cricket</td><td>76</td></tr>
<tr><td>Football</td><td>54</td></tr>
<tr><td>Netball</td><td>52</td></tr>
<tr><td>Table Tennis</td><td>30</td></tr>
</table>

• Interpretation and Analysis of Data
Ask questions orally or in written form to determine students' interpretation of data including their understanding of mode e.g.
o How many students' favourite sport is badminton??
o How many more students like football than table tennis?
o Which is the most popular sport? (mode)

Students will make decisions based on the interpretation of data e.g.
o The principal is planning a school sporting competition. Which sport should she select for the competition?
o Give a reason for your answer.
o Which two foods should be served at a class party?
</td></tr>
</table>

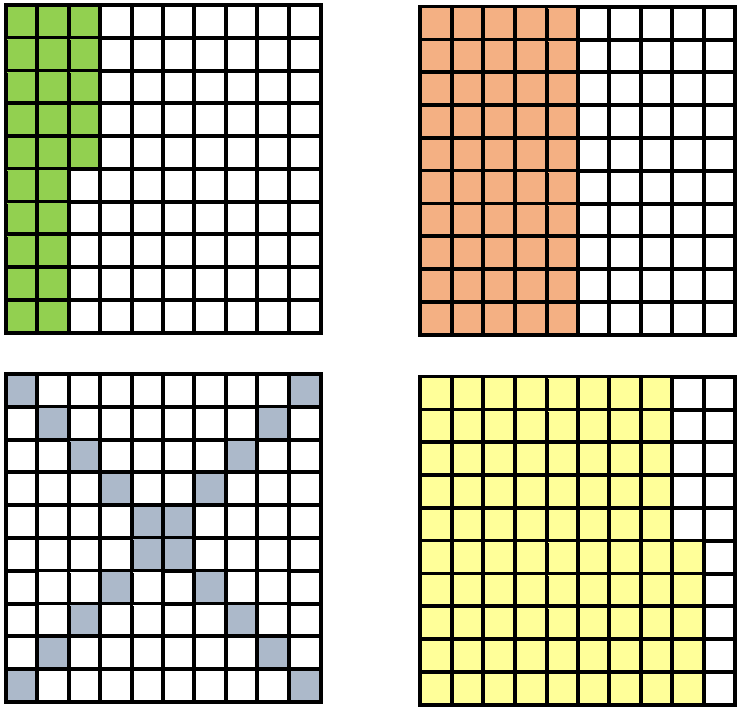
Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		○ *Give a reason for your answer.* Create an appropriate checklist to record observations of students' skills e.g. Student ○ *used an appropriate method of data collection* ○ *sorted and organized data using proper criteria* ○ *displayed data in a table/tally chart correctly* ○ *represented data in an appropriate graph* ○ *used a suitable scale on the selected graph* ○ *interpreted the data from the graph correctly* ○ *made appropriate generalizations* ○ *used the data represented to support decision making* • ***Paper and Pencil Tasks/Interviews/Journal Writing*** **a)** Create or download worksheets with simple problems based on frequency tables, tally charts, pictographs, block graphs, bar graphs. Use item analysis data to determine students' errors. Use questioning to determine students thinking with both correct and incorrect responses. **b)** Have students write journal entries discussing the information represented on graphs (brief reports). Students should use the information to draw conclusions and make decisions.

CLASS: Standard FIVE

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
Mathematics	❑ Number ❑ Fractions • Develop and apply procedures to add and subtract fractions and mixed numbers to solve problems. • Develop and apply procedures to multiply a fraction by a whole number to solve problems. • Develop and apply procedures to divide whole numbers by fractions and fractions by whole numbers to solve problems. ❑ Decimals • Develop and apply procedures to multiply decimals by whole numbers and to divide a decimal by a whole number (up to hundredths) to solve problems. ❑ Per Cent • Develop an understanding of percent, concretely, pictorially and symbolically. • Calculate the percent of a quantity. • Express a quantity as a percentage of another. • Relate per cents to fractions (halves, quarters, fifths tenths) and decimals. • Compare and order fractions, per cents and decimals. • Solve problems involving fractions, decimals and per cents.	• Use for all strands/topics: Use surveys and diagnostic tests • Administer survey test to students. A survey test can be a weekly, monthly and/or termly Mathematics test. • Selected past paper items for the Secondary Entrance Assessment (SEA) examination, used for practice, can be used as a survey test. • You can vary the item types in the survey test e.g. • selected response types e.g. multiple-choice, matching, true/ false • constructed response/supply types e.g. fill in the blanks, short answers • Conduct item analysis on the results of the survey test. • Identify errors made by students. You can do this for individual students or note general errors made by some or all students. • Develop a diagnostic test with items that are designed to further assess the specific content in which the errors are seen. • Design the diagnostic test according to the hierarchy of skills in each content area (from simple to more complex). • Use item types that are focused on identifying the content or skills in which students are displaying deficiencies. Start at the level of the deficiencies to assess the content/skills. • Administer the diagnostic test to individual, some or all students.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	❑ Problem Solving • Create and solve real-life, one-step and multi-step problems involving whole numbers, fractions, mixed numbers, decimals, per cents and money (including profit and loss, discount). • Solve problems involving unequal sharing (not including the use of ratio). ❑ Geometry ❑ Solids and Plane Shapes • Describe solids in terms of their properties. • Investigate right angles and non-right angles in solids • Investigate the properties of solids by examining their cross-sections, base and height and angles • Identify types of quadrilaterals: rectangle, square, trapezium, parallelogram and rhombus • Classify and compare quadrilaterals according to their attributes (angles, sides, perpendicular and parallel). • Solve problems involving solids and plane shapes. ❑ Measurement ❑ Linear • Develop and use formulae for finding the perimeter of squares and rectangles • Write and explain the formulae for finding the perimeter of any given rectangle and square	• Look for error patterns among students' incorrect responses Determine whether student errors form patterns or they are just random mistakes. • You can discuss the students' responses with them, allowing them the opportunity to give explanations of the strategies they used for solving the problems. This will inform your diagnosis even further. • Use the results of the diagnosis to determine the specific Mathematical content and/or skills that need remediation. • Plan interventions for individual, some or all students which directly target the identified deficiencies in their knowledge and skills. **Other diagnostic strategies:** Use the recommended diagnostic strategies for Standard Four content. Apply similar diagnostic strategies for new content in Standard Five. **Samples of other diagnostic strategies:** ❑ Number ***Online Tests/Worksheets/Questioning*** • Use interactive online tests/worksheets/games and observe students while they work or have students share their screen if they are working remotely. Download tests if the option is available to support diagnostic strategies with students asynchronously/synchronously. • Use sample online tests to create your own diagnostic tests. • Ask students questions to determine their strategies for solving problems.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
	• Calculate and compare perimeters of squares and rectangles • Solve problems in real-life contexts involving perimeter ❑ Mass/Weight • Solve problems involving mass/weight ❑ Time • Solve problems involving time ❑ Area • Solve problems in real-life contexts involving area • Solve problems involving perimeter and area ❑ Statistics • Develop the concept of mean/average. • Solve problems involving mean/average	• **Fractions** https://www.liveworksheets.com/worksheets/en/Math/Fractions/Fractions_pd1503367ll https://www.commoncoresheets.com/downloadWorksheet.php?pageNumber=2&path=Math%2FFractions%2FAdding-Sub+Mixed+Same+Denom%2FEnglish&pageType=1 (Addition and Subtraction inclusive of Mixed Numbers, downloadable worksheets) https://www.liveworksheets.com/ri1605881yy https://www.liveworksheets.com/bx2167299ds (up to Multiplication of fractions by whole numbers) https://www.commoncoresheets.com/downloadWorksheet.php?pageNumber=2&path=Math%2FFractions%2FMultiplying+-+Whole+Number%2FEnglish&pageType=1 (Multiplication of Fractions by Whole Numbers) • **Decimals** https://www.liveworksheets.com/worksheets/en/Math/Decimals/Decimals_Tenths_and_Hundredths_rb1231971np https://www.liveworksheets.com/worksheets/en/Math/Money/Money_addition_and_subtraction_-_4_digits_with_decimals_qq1455934bh https://www.liveworksheets.com/worksheets/en/Math/Decimals/Multiplying_and_Dividing_Decimals_by_Powers_of_10_dt1688323dq https://www.liveworksheets.com/zs1487417sn

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		Performance Task/Observation/Questioning • **Per Cent** 1. Present students with hundred grids and have them shade grids to represent percentages e.g. 1%,5%, 10%, 20%, 25%, 50%, 75% 100%. Alternatively, have students shade grids to represent the given percentages. 

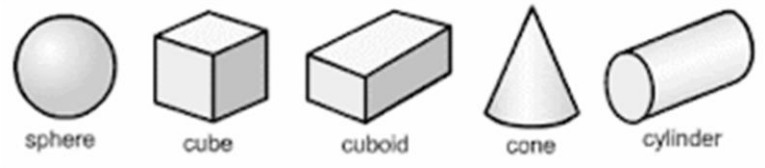
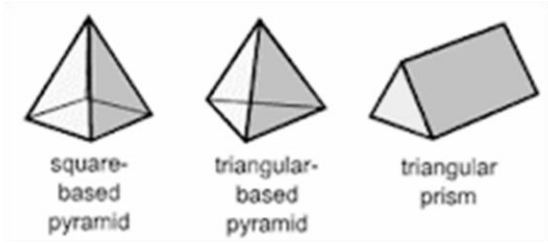
<table>
<tr><th>Subject</th><th>CHECKLIST of Outcomes/Competencies/Standards</th><th>Strategies for Diagnosing</th></tr>
<tr><td></td><td></td><td>
2. The activity could be extended to the use of concrete objects for example counters of various colours, Skittles, M & M’s, Smarties etc in which students can express the number of coloured objects (out of 100) as a percent of the whole quantity. Number lines (up to 100) and metre rules can also be used for this activity.
3. Extend the task to have students relate percent to fractions and decimals and compare and order fractions, decimals and percentages.
4. Provide students with worksheets with graded exercises to assess computation and problem solving involving per cent e.g. finding a percent of a quantity, expressing a quantity as a percent of another
5. Observe students as they work and record their responses in appropriately designed checklists/rubrics and/or anecdotal records. A sample of a partial checklist for student understanding of Per Cent is given here. This checklist can be extended.
<table>
<tr><th></th><th>Statements
The student:</th><th>Yes</th><th>No</th><th>Notes</th></tr>
<tr><td rowspan="3">1.</td><td rowspan="3">demonstrates an understanding of the concept of percent
a. concretely
b. pictorially
c. abstractly</td><td></td><td></td><td rowspan="3"></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>2.</td><td>a. can express a fraction as a percent</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing

	b. can express a percent quantity as a fraction			
	c. can express a decimal as a percent			
	d. can express a percent as a decimal			
3.	can order quantities expressed as fractions, decimals and percent			
4.	can calculate the percent of a quantity a. by converting to fractions/decimals first b. by using the algorithm c. any other method			
5.	can express one quantity as a percent of another			

❑ Geometry

- **Solids and Plane Shapes**
  1. Present students with various solid shapes. Ask students appropriate questions to determine what they know about the properties of the shapes: number of faces, edges, vertices, cross sections (uniform/non-uniform), base, height, angles.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		  2. Prepare worksheets with graded exercises/one step problems to determine students' knowledge of solid shapes and their properties. Include interactive online worksheets/games if available (relevant content). Example are given here: https://www.iknowit.com/lessons/e-geometry-quadrilaterals.html https://www.commoncoresheets.com/downloadWorksheet.php?pageNumber=1&path=Math%2FShapes%2FFinding+Quadrilaterals%2FEnglish&pageType=1 3. Extend activities to plane shapes. Include properties such as angles, sides: inclusive of perpendicular and parallel. 4. Record students' responses in appropriately designed checklists or anecdotal records.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		Paper and Pencil Tasks/Online worksheets/Interviews ❑ Measurement • **Linear/Mass/Weight/Time/Area** 1. Use online/interactive worksheets with items on Measurement areas. Create items from sample online tests. https://www.liveworksheets.com/worksheets/en/Math/Area_and_perimeter/Week_19_-_Mathematics_-_Wednesday_6_xk875296nn https://www.liveworksheets.com/worksheets/en/English_as_a_Second_Language_(ESL)/Telling_the_time/What_time_is_it$_fu74966jc https://www.liveworksheets.com/worksheets/en/Math/Mass/Mass_tb1945533og https://www.liveworksheets.com/worksheets/en/Math/Mass/Convert_and_compare_mass_jp240979bx 2. Use past SEA items based on Measurement concepts: Linear, Area, Time and Mass/Weight to create graded tests. Have students solve problems. Conduct interviews with students to determine their strategies used for both correct and incorrect solutions. Record students' responses and analyse to determine their deficiencies in problem solving involving the Measurement content.

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		❑ STATISTICS • **Mean or Average** ***Paper and Pencil Tasks/Interviews*** 1. Create worksheet with items based on calculation of the mean. Present to students and have them solve the problems on the worksheet. Ask appropriate questions to determine students' understanding and strategies used.

CALCULATING THE MEAN

Directions:
To find the ***mean*** of a set of numbers, add all of the data together, then divide that sum by the amount of numbers in the set.

Example: Here is a set of numbers – 2, 2, 8, 10, 8
- ***Add them together*** 2 + 2 + 8 + 10 + 8 – The total is 30
- ***Divide by the amount of numbers in the set*** – 30 divided by 5 gives ***a mean of 6***

Calculate the ***mean*** for each set of numbers below.

		SUM	DIVIDED BY	MEAN
1)	2, 4, 6, 8	____	**4**	____
2)	2, 1, 4, 6, 1, 4	____	**6**	____
3)	12, 8, 10	____	___	____
4)	6, 2, 5, 7, 5	____	___	____
5)	1, 2, 4, 6, 1, 6, 1	____	___	____
6)	12, 4, 6, 10	____	___	____
7)	2, 10, 4, 6, 10, 4	____	___	____
8)	9, 8, 10	____	___	____
9)	6, 8, 5, 11, 5	____	___	____
10)	5, 1, 4, 6, 1, 2, 2	____	___	____

Subject	CHECKLIST of Outcomes/Competencies/Standards	Strategies for Diagnosing
		2. Use past SEA items based on mean/average to create graded tests based on mean/average. Have students solve problems inclusive of those with tables, pictographs and bar graphs. Conduct interviews with students to determine their strategies used for both correct and incorrect solutions. Record students' responses and analyse to determine their deficiencies in problem solving involving mean/average.

CURRICULUM ADAPTATION

- Exemplars of adapted curricula are provided for each subject from forms one to three.
- These exemplars are a guide to allow for identification of MINIMUM learning outcomes that must be covered for a student to move on to the next learning level. Of course, this will vary by school and even by student.
- The utility of the exemplars will depend on the data collected from the diagnostic assessments conducted for each subject.
- Based on the data collected from diagnostic assessments, the curriculum could be adapted generally for ensuring
  - minimum learning outcomes of the previous learning level is completed,
  - preparation for the next learning level is on track
- Also, specific workplans can be developed for intervention and remediation. Individual or small groups of students can be assigned, specifically for Math and ELA, self-paced and guided practise sessions/breakout activities. This applies for both students who are struggling and those who maybe more advanced.

CLASS: Infant ONE

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Pre-Number** • Classify objects into groups and subgroups using different criteria • Use one-to-one correspondence to match objects in sets to determine more than, less than or equal to • Rote count to 20 in ascending and descending order **Number Concepts** • Understand the concept of numbers 1-10 • Count objects to demonstrate one to-one correspondence (up to 10) • Count objects in different arrangements to demonstrate conservation of number • Match the number names and numerals to the quantities they represent up to 10 • Sequence number names and numerals • Read and write number names and numerals • Compare groups of objects and order numbers • Explore the value of coins and bills (1¢, 5¢, 10¢, $1, $5, $10) and their equivalence • Use the language of money in role-playing situations involving the exchange of goods for money (exact value of the coins and bills) **Addition**	**NUMBER** **Pre-Number** https://www.youtube.com/watch?v=Zg5AAxgf9qg https://www.k5learning.com/worksheets/kindergarten/sorting-objects-a.pdf https://www.k5learning.com/worksheets/kindergarten/sort-by-color.pdf https://www.k5learning.com/worksheets/kindergarten/sort-by-size.pdf https://www.k5learning.com/worksheets/kindergarten/sort-by-shape.pdf **Number Concepts** https://learn.moe.gov.tt/mod/url/view.php?id=6292 https://www.youtube.com/watch?v=FFwO_DWZh3E https://www.math-only-math.com/count-the-numbers-and-match.html https://www.youtube.com/watch?v=L1LDBbdQxl8 https://www.mathworksheets4kids.com/number-names/charts/1to10-theme-1.pdf https://www.math-only-math.com/numbers-and-their-names.html https://www.k5learning.com/worksheets/kindergarten-sequencing-numbers-least-to-greatest-10-1.pdf https://www.sheppardsoftware.com/mathgames/earlymath/BalloonPopMath_Order.htm https://www.youtube.com/watch?v=bWUgZm_AE64

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve one-step real-life addition problems presented orally or pictorially (using concrete materials, whole number and money, no symbol) • Combine two groups of objects to model addition (count the amount in each group and the sum) • Solve problems involving addition using concrete and pictorial representations in vertical and horizontal arrangements • Describe what happens to a group after addition is performed • Record addition using pictorial representations/drawings, numerals and/or words e.g. 3 add 2 equal 5 **Mental Mathematics** • Solve problems using mental strategies such as: o Addition facts o Add-one as it relates to forward counting **GEOMETRY** **Solids and Plane Shapes** • Identify solids (using informal names for cuboid, cube, sphere, cylinder, and cone) and plane shapes (squares, triangles, rectangles and circles, using formal names) in the surroundings • Match solids and plane shapes with familiar objects in the surroundings • Match word names to solids and plane shapes	https://www.youtube.com/watch?v=75NQK-Sm1YY (The Very Hungry Caterpillar-Animated Story) https://www.youtube.com/watch?v=Ihl_9qjvWuc (number bonds to 7 - teacher resource-audio can be used) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) https://www.youtube.com/watch?v=zija7aVmziY (number bonds to 5) **Addition** https://www.youtube.com/watch?v=WRb5iK5fZD0 (teacher and student resource) https://www.youtube.com/watch?v=hrj4wsq3U8M (teacher resource, no symbol) https://www.youtube.com/watch?v=THBa5--uaOM (teacher and student resource, symbol: + is introduced, teacher to determine student readiness for introduction of symbol) https://www.youtube.com/watch?v=2wR4rJM_M_s (teacher resource) https://www.youtube.com/watch?v=QJqsgaaxhcs https://www.youtube.com/watch?v=WwlrbMWcTtQ **Mental Mathematics** https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) https://www.youtube.com/watch?v=zija7aVmziY (number bonds to 5) **GEOMETRY** **Solids and Plane Shapes** https://www.youtube.com/watch?v=OEbRDtCAFdU

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Construct models using solids and/or plane shapes **MEASUREMENT** **Length** • Investigate the lengths of objects • Use comparison vocabulary to compare two objects (direct comparison) in relation to length • Communicate effectively using vocabulary associated with linear measures **MEASUREMENT** **Time** • Describe times of the day (e.g. night-time, daytime, lunchtime) and related activities (e.g. eating breakfast, going to sleep) using appropriate vocabulary **STATISTICS** **Object Charts** • Classify objects into groups and sub-groups using different criteria • Collect and classify data about objects, self and others to make decisions • Construct and interpret object charts based on real-life problems or situations • Make informed decisions based on data analysed	https://www.moe.gov.tt/places/ (integration) **MEASUREMENT** **Length** https://learn.moe.gov.tt/mod/url/view.php?id=6301 https://www.youtube.com/watch?v=aLsmFbW8ikU https://www.youtube.com/watch?v=F-FVrxWx88g https://www.youtube.com/watch?v=TNC-1n-8PB8 https://www.youtube.com/watch?v=KrpSjTLTD3k https://www.mathworksheets4kids.com/long-short/reptiles1.pdf https://i0.wp.com/medinakids.com/old/alphabet/worksheets/opposite/opposites--fat-and-thin-worksheet2.png https://www.mathworksheets4kids.com/tall-short/recognize1.pdf https://www.moe.gov.tt/things-around-me-revised/ (integration) https://www.youtube.com/watch?v=ryIxBrO1bJY (parts can be used) https://www.youtube.com/watch?v=JjKhSyUVFBI **MEASUREMENT** **Time** https://www.youtube.com/watch?v=nfnAap8094M https://www.moe.gov.tt/health-and-wellbeing-revised/ (integration) https://www.youtube.com/watch?v=WX7oTjmpLx0 **STATISTICS** **Object Charts** https://www.youtube.com/watch?v=FpHk3bFdRNk https://www.youtube.com/watch?v=akCffk5ELy4 https://www.youtube.com/watch?v=382t1nqfyNk

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term II	**NUMBER** **Number Concepts** • Use 5 as a reference or benchmark in the formation of numbers from 6 to 10 e.g. 'seven is two more than five' • Order objects and use appropriate language to describe position (first, second, third and last) • State the equivalence of coins and bills up to 10 cents and 10 dollars • Use the language of money in role-playing situations involving the exchange of goods for money (exact value of the coins and bills) **Number Patterns** • Recognise the arrangement of dots/objects in standard spatial arrangements of numbers up to 5 (subitize) • Distinguish between repeating patterns and non-repeating patterns in a given set by identifying the part that repeats or errors (concrete) • Explore patterns using repetitions of 2-3 elements • Recognise and explore number patterns up to 10 (pictorial) • Describe a given repeating pattern containing two to three elements in its core **Addition** • Solve problems involving addition using concrete and pictorial representations in vertical and horizontal arrangements	**NUMBER** **Number Patterns** https://www.youtube.com/watch?v=6yyz_OycV4A (subitize) https://www.moe.gov.tt/core-skills-4/ https://www.youtube.com/watch?v=yMHS_YX5Y4M **Addition** https://www.youtube.com/watch?v=WRb5iK5fZD0 (teacher and student resource) https://www.youtube.com/watch?v=hrj4wsq3U8M (teacher resource, no symbol) https://www.youtube.com/watch?v=THBa5--uaOM (teacher and student resource, symbol: + is introduced, teacher to determine student readiness for introduction of symbol) https://www.youtube.com/watch?v=2wR4rJM_M_s (teacher resource) https://www.youtube.com/watch?v=QJqsgaaxhcs https://www.youtube.com/watch?v=WwlrbMWcTtQ https://www.youtube.com/watch?v=QCO7SA7sRXs (parts can be used/contains symbol) https://www.youtube.com/watch?v=WwlrbMWcTtQ **Mental Mathematics** https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) https://www.youtube.com/watch?v=zija7aVmziY (number bonds to 5) **GEOMETRY** **Solids and Plane Shapes** https://www.youtube.com/watch?v=OEbRDtCAFdU

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Subtraction • Solve one-step real-life subtraction problems presented orally or pictorially (using concrete materials, whole numbers and money) • Solve problems involving subtraction using concrete and pictorial representations in vertical and horizontal arrangements (no symbol) • Take away from a group of objects to model subtraction (count the starting amount, count out a set, count how many are left) • Describe what happens to a group after subtraction is performed • Record subtraction using pictorial representations/drawings, numerals and/or words e.g. 5 take away 2 equals 3 **Mental Mathematics** • Investigate connections between addition facts (with sum less than or equal to 10) and the corresponding subtraction facts (minuend less than or equal to 10) • Solve problems using mental strategies such as: o Addition and subtraction facts o Add-one and subtract-one as it relates to forward and backward counting o "Make Five" (think addition) **GEOMETRY** **Solids and Plane Shapes**	https://www.moe.gov.tt/places/ (integration) **Geometrical Patterns** https://www.moe.gov.tt/learn-play-work/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Length** https://learn.moe.gov.tt/mod/url/view.php?id=6301 https://www.youtube.com/watch?v=aLsmFbW8ikU https://www.youtube.com/watch?v=F-FVrxWx88g https://www.youtube.com/watch?v=TNC-1n-8PB8 https://www.youtube.com/watch?v=KrpSjTLTD3k https://www.mathworksheets4kids.com/long-short/reptiles1.pdf https://i0.wp.com/medinakids.com/old/alphabet/worksheets/opposite/opposites--fat-and-thin-worksheet2.png https://www.mathworksheets4kids.com/tall-short/recognize1.pdf https://www.moe.gov.tt/things-around-me-revised/ (integration) https://www.youtube.com/watch?v=ryIxBrO1bJY (parts can be used) https://www.youtube.com/watch?v=JjKhSyUVFBI **Weight/Mass** https://learn.moe.gov.tt/mod/url/view.php?id=6294 **Time** https://www.moe.gov.tt/health-and-wellbeing-revised/ (integration) https://www.moe.gov.tt/learn-play-work/ (integration)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Build models with solids and plane shapes and describe structures using appropriate language • Describe solids and plane shapes using appropriate vocabulary related to geometric attributes (size, shape, position) e.g. big, small, flat, round, thick, thin, pointed • Classify solids (e.g. colour, size, shape, function) and plane shapes (e.g. size, shape), according to one or more common attributes including students' own criteria and explain reasons for classification **Geometrical Patterns** • Distinguish between repeating and non-repeating patterns in a given set involving solids or plane shapes by identifying the part that repeats or error • Explore patterns using repetitions of 2-3 elements • Copy a given pattern and describe the pattern • Identify the pattern rule in repeating patterns • Create patterns using solids or plane shapes (repeating – 2 to 3 elements) **MEASUREMENT** **Length** • Investigate the lengths of objects • Use comparison vocabulary to compare two objects (direct comparison) in relation to length	**STATISTICS** **Object Charts and Picture Charts** https://learn.moe.gov.tt/mod/resource/view.php?id=7144 https://learn.moe.gov.tt/mod/url/view.php?id=6077 (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=806 (integration) https://www.youtube.com/watch?v=FpHk3bFdRNk https://www.youtube.com/watch?v=akCffk5ELy4 https://www.youtube.com/watch?v=382t1nqfyNk

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Describe the distance of objects using appropriate vocabulary • Communicate effectively using vocabulary associated with linear measures • Describe length as the measure of an object from one end to the next **Weight/Mass** • Investigate the mass/weight of objects • Use comparison vocabulary to compare two objects (direct comparison) in relation to mass/weight (heft, push, pull) **Time** • Sequence activities according to time of occurrence • Describe events/activities that take a long time or a short time **STATISTICS** **Object Charts and Picture Charts** • Construct and interpret object and picture charts based on real-life problems or situations • Make informed decisions based on data analysed	
Term III	**NUMBER** **Number Concepts** • Estimate a given quantity using 5 as a benchmark and verify by counting **Number Patterns**	**NUMBER** **Number Patterns** https://www.moe.gov.tt/core-skills-4/ https://www.youtube.com/watch?v=yMHS_YX5Y4M **Addition and Subtraction**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Explore patterns using repetitions of 2-3 elements (name as 'number' pattern e.g. 'two' pattern) • Determine the pattern rule and extend the repeating pattern using concrete materials, pictorial representation or symbols • Name a given repeating pattern with two to three elements in its core • Create number patterns using repetition of elements **Addition and Subtraction** • Solve one-step real-life addition and subtraction problems • Create number stories using appropriate vocabulary (including the language of money) **Mental Mathematics** • Investigate connections between addition facts (with sum less than or equal to 10) and the corresponding subtraction facts (minuend less than or equal to 10) • Solve problems using mental strategies such as: o Addition and subtraction facts o Add-one and subtract-one as it relates to forward and backward counting o "Make Five" (think addition) **GEOMETRY** **Solids and Plane Shapes** • Build models using solids and plane shapes and describe compositions/structures	https://www.youtube.com/watch?v=WRb5iK5fZD0 (teacher and student resource) https://www.youtube.com/watch?v=hrj4wsq3U8M (teacher resource, no symbol) https://www.youtube.com/watch?v=THBa5--uaOM (teacher and student resource, symbol: + is introduced, teacher to determine student readiness for introduction of symbol) https://www.youtube.com/watch?v=2wR4rJM_M_s (teacher resource) https://www.youtube.com/watch?v=QJqsgaaxhcs https://www.youtube.com/watch?v=WwlrbMWcTtQ https://www.youtube.com/watch?v=WwlrbMWcTtQ **Mental Mathematics** https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) https://www.youtube.com/watch?v=zija7aVmziY (number bonds to 5) **GEOMETRY** **Solids and Plane Shapes** https://www.youtube.com/watch?v=OEbRDtCAFdU https://www.moe.gov.tt/places/ (integration) **Geometrical Patterns** https://www.moe.gov.tt/learn-play-work/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Length**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Compare: o Two solids o Two plane shapes by stating similarities and differences (size, shape, position) • Select from a given set of solids or plane shapes: o Solids or plane shapes that are the same o Solids or plane shapes that are alike/similar o Solids or plane shapes that are different and explain reason(s) for selection **Geometrical Patterns** • Explore patterns using repetitions of 2-3 elements (name as 'number' pattern e.g. 'two' pattern) • Create patterns using solids or plane shapes (repeating – 2 to 3 elements) • Use a pattern rule to extend repeating patterns **MEASUREMENT** **Length** • Investigate the lengths of objects • Use comparison vocabulary to compare two objects (direct comparison) in relation to length • Describe the distance of objects using appropriate vocabulary • Communicate effectively using vocabulary associated with linear measures • Describe length as the measure of an object from one end to the next	https://learn.moe.gov.tt/mod/url/view.php?id=6301 https://www.youtube.com/watch?v=aLsmFbW8ikU https://www.youtube.com/watch?v=F-FVrxWx88g https://www.youtube.com/watch?v=TNC-1n-8PB8 https://www.youtube.com/watch?v=KrpSjTLTD3k https://www.mathworksheets4kids.com/long-short/reptiles1.pdf https://i0.wp.com/medinakids.com/old/alphabet/worksheets/opposite/opposites--fat-and-thin-worksheet2.png https://www.mathworksheets4kids.com/tall-short/recognize1.pdf https://www.moe.gov.tt/things-around-me-revised/ (integration) https://www.youtube.com/watch?v=ryIxBrO1bJY (parts can be used) https://www.youtube.com/watch?v=JjKhSyUVFBI **STATISTICS** **Object Charts and Picture Charts** https://learn.moe.gov.tt/mod/resource/view.php?id=7144 https://www.moe.gov.tt/1-myself-my-family-my-friends-revised/ (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=810 (integration) https://www.youtube.com/watch?v=FpHk3bFdRNk https://www.youtube.com/watch?v=akCffk5ELy4 https://www.youtube.com/watch?v=382t1nqfyNk

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Weight/Mass • Investigate the mass/weight of objects • Use comparison vocabulary to compare two objects (direct comparison) in relation to mass/weight (heft, push, pull) **Time** • Sequence activities according to time of occurrence • Describe events/activities that take a long time or a short time **STATISTICS** **Object Charts and Picture Charts** • Construct and interpret object and picture charts based on real-life problems or situations • Make informed decisions based on data analysed	

CLASS: Infant TWO

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Number Concepts** • Count to or from 100 in ascending and descending order (rote count) • Skip count in 2s (starting at zero and one) and 5s (starting at zero) to or from 20 in ascending and descending order • Understand the concept of numbers 0-20 (Explain the meaning of zero (none, no one, empty, nothing) after solving related subtraction problems e.g. There are 5 birds on a tree. They all flew away. How many are left?) • Count objects to demonstrate one-to-one correspondence (up to 20) • Count objects in different arrangements to demonstrate conservation of number • Match the number names and numerals to the quantities they represent up to 20 • Sequence number names and numerals • Read and write number names and numerals • Identify the number before, the number after, and the number between, using a number line • Insert missing numbers on a number line • Compare groups of objects and order numbers to 20	**NUMBER** **Number Concepts** https://www.youtube.com/watch?v=bGetqbqDVaA https://www.youtube.com/watch?v=bGetqbqDVaA https://www.youtube.com/watch?v=ZlsyWhfvvVg https://www.youtube.com/watch?v=usBczo02DYo https://www.math-only-math.com/numbers-and-counting-up-to-20.html https://www.mathworksheets4kids.com/number-names/charts/1to20-theme-1.pdf https://www.youtube.com/watch?v=-V8X6_aLEdg https://www.youtube.com/watch?v=nsScVF6Jo6A https://www.youtube.com/watch?v=GvTcpfSnOMQ (skip count in twos-use part) https://www.youtube.com/watch?v=D0Ajq682yrA (count to 20) https://www.youtube.com/watch?v=y1oa6o0fMKk (number bonds to 5-reinforcement) **Number Patterns** https://www.moe.gov.tt/core-skills-4/ https://www.youtube.com/watch?v=yMHS_YX5Y4M **Addition** https://learn.moe.gov.tt/mod/url/view.php?id=6339 https://www.youtube.com/watch?v=AaxrqDuw1Xk https://www.youtube.com/watch?v=uQiUTFO78Jk https://www.k5learning.com/worksheets/math/grade-1-adding-2-numbers-sum-under-20-a.pdf

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Explore the value of coins and bills (up to 25¢, up to $20) e.g. 25 cents is worth more than 5 cents (use the idea of purchase of items priced at 5 cents and how many can be bought) • Use the language of money in role-playing situations involving the exchange of goods for money (exact value of the coins and bills, one item and receive change) • State the equivalence of coins and bills up to 25 cents and 20 dollars **Number Patterns** • Recognize the arrangement of dots / objects in standard spatial arrangements of numbers up to 10 (subitize) • Distinguish between repeating patterns and non-repeating patterns in a given set by identifying the part that repeats or errors • Explore patterns using repetitions of 2 to 4 elements • Describe a given repeating pattern containing two to four elements in its core • Determine the pattern rule and extend the repeating pattern using concrete materials, pictorial representation or symbols • Name a repeating pattern containing two to four elements in its core (name as 'number' pattern e.g. 'two' pattern) • Identify the missing element(s) in a given repeating pattern	https://www.youtube.com/watch?v=luw31Y66eyU https://www.youtube.com/watch?v=PUY072JHE4g https://www.k5learning.com/worksheets/kindergarten-adding-pictures-sums-to-20-1.pdf https://www.k5learning.com/free-preschool-kindergarten-worksheets/addition/addition-vertical-sums-to-20 https://www.youtube.com/watch?v=QCO7SA7sRXs https://www.youtube.com/watch?v=tVHOBVAFjUw **Subtraction** https://learn.moe.gov.tt/mod/url/view.php?id=6342 https://learn.moe.gov.tt/mod/url/view.php?id=6343 https://www.k5learning.com/worksheets/math/grade-1-subtraction-up-to-20-no-regrouping-a.pdf https://www.k5learning.com/worksheets/kindergarten-subtraction-1-digit-from-20-no-borrow-v1.pdf https://www.youtube.com/watch?v=0bxECUpuDaw https://www.youtube.com/watch?v=4Fh4KOxsdos https://www.youtube.com/watch?v=RcnuYy9Y_Ng&t=53s **Mental Mathematics** https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) **GEOMETRY** **Solids and Plane Shapes** https://learn.moe.gov.tt/mod/resource/view.php?id=6197 (integration)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Create number patterns using repetition of elements **Addition** • Solve one-step real-life addition problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) involving 2 addends with a sum less than or equal to 20 and using a variety of problem solving strategies such as, use a model, act it out, draw a picture and look for a pattern • Solve problems presented in horizontal and vertical arrangements • Record addition pictorially and symbolically using number sentences (words and symbols). E.g. 13 plus 2 is 15; 13 add 2 is equal to 15; 13 add 2 equals 15; 13 + 2 = 15 • Describe what happens to a group after addition • Use the count on strategy to solve addition problems **Subtraction** • Solve one-step real-life subtraction problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) with minuend less than or equal to 20 and using a variety of problem solving strategies such as, use a model, act it out, draw a picture and look for a pattern	https://www.moe.gov.tt/core-skills-4/ (constructing models using solids) https://www.moe.gov.tt/mapping-your-immediate-worlds-revised-2/ (integration) https://www.moe.gov.tt/the-built-community/ (integration) https://www.moe.gov.tt/core-skills-4/ (describing solids) https://www.youtube.com/watch?v=guNdJ5MtX1A https://www.youtube.com/watch?v=cNlthXnbRfU **Geometrical Patterns** https://www.moe.gov.tt/core-skills-4/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=uCV6P5vcvgs (parts can be used) https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Length** https://www.youtube.com/watch?v=2EUOuzrEPmQ https://www.k5learning.com/worksheets/math/grade-1-measurement-longer-shorter-a.pdf https://www.k5learning.com/worksheets/math/grade-1-measurement-taller-shorter-a.pdf https://www.k5learning.com/worksheets/math/grade-1-measurement-longest-shortest-a.pdf https://www.youtube.com/watch?v=ryIxBrO1bJY https://www.youtube.com/watch?v=IFP4aSRGtpE **Weight/Mass** https://learn.moe.gov.tt/mod/url/view.php?id=6344 https://learn.moe.gov.tt/mod/url/view.php?id=6346

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve problems involving subtraction represented in vertical and horizontal arrangements • Record subtraction pictorially and symbolically using number sentences (words and symbols) e.g. 15 take away 2 equals 13, 15 – 2 = 13 • Describe what happens to a group after subtraction from • Use the count back and count on strategies to solve subtraction problems **Mental Mathematics** • Develop strategies to solve problems mentally: o Addition and subtraction facts o Add-one and subtract-one as it relates to forward and backward counting o Add-zero and subtract-zero facts o Count on / count back • Investigate connections between addition facts (with sum less than or equal to 20) and the corresponding subtraction facts (minuend less than or equal to 20) • Associate addition and subtraction to forward and backward counting **GEOMETRY** **Solids and Plane Shapes** • Construct models using solids and plane shapes and describe composition of model	https://www.moe.gov.tt/food/ (integration) https://www.youtube.com/watch?v=cgmcEIJ5664 **Time** https://www.youtube.com/watch?v=HrYdAfeqmDM https://www.mathworksheets4kids.com/calendar/reading/month-easy1.pdf https://www.youtube.com/watch?v=Fe9bnYRzFvk (months) **STATISTICS** **Picture Charts** https://learn.moe.gov.tt/mod/resource/view.php?id=7145 https://www.moe.gov.tt/1-myself-my-family-my-friends-revised/ (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=810 (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=9227 https://learn.moe.gov.tt/mod/url/view.php?id=6370 https://learn.moe.gov.tt/mod/resource/view.php?id=6198 (integration) https://www.moe.gov.tt/core-skills-4/

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Describe solids and plane shapes using appropriate vocabulary (e.g. big, small, flat, round, thick, thin, pointed) related to geometric attributes (e.g. size, shape, position and ability to roll, stack or stand) • Classify solids and plane shapes (e.g. size, shape), according to one or more common attributes including student's criteria, and explain reasons for classification (e.g. colour, size, shape, function) • Identify solids using formal names **Geometrical Patterns** • Distinguish between repeating and non-repeating patterns in a given set involving solids or plane shapes by identifying the part that repeats and errors • Explore patterns using plane shapes and solids • Explore patterns using repetitions of 2-4 elements (name as 'number' pattern e.g. 'two' pattern) • Describe the pattern and identify the pattern rule in repeating pattern • Use pattern rule to extend repeating patterns • Create repeating patterns using solids or plane shapes (concrete and pictorial) • Describe a repeating pattern as a 'number' pattern, e.g. O, □, O, □, O, □ is a 'two' pattern; □, O, Δ, □, O, Δ, □, O, Δ is a 'three' pattern **MEASUREMENT**	

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Length • Compare and order the lengths of three or more objects using direct comparison and explain reasoning, using appropriate vocabulary e.g. longer/shorter • Create repeating patterns using objects of various lengths **Weight/Mass** • Compare objects according to mass/weight using an equal arm balance and appropriate vocabulary • Discuss observations of the equal arm balance when objects are placed in the pans **Time** • Use appropriate vocabulary when describing activities or events associated with time • Sequence activities according to: o Time of occurrence o Chronological order e.g. daily schedule, preparing to come to school • Interpret calendars **STATISTICS** **Picture Charts** • Collect and classify data to make decisions based on a real-life situation or problem • Identify features of picture charts • Construct picture charts (with and without grid, vertical and horizontal arrangements) based on real-life problems or situations	

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Interpret picture charts based on a real-life problem or situation • Make informed decisions based on data analysed • Communicate findings and decisions using appropriate vocabulary	
Term II	**NUMBER** **Number Concepts** • Use 10 as a reference or benchmark in the formation of numbers from 11 to 20 e.g. 'seventeen is seven more than ten' • Estimate a given quantity using 10 as a benchmark and verify by counting • Order objects and use appropriate language to describe its position up to tenth • Explore the value of coins and bills (up to 25¢, up to $20) e.g. 25 cents is worth more than 5 cents (use the idea of purchase of items priced at 5 cents and how many can be bought) • Use the language of money in role-playing situations involving the exchange of goods for money (exact value of the coins and bills, one item and receive change) • State the equivalence of coins and bills up to 25 cents and 20 dollars **Number Relationships** • Understand the concept of equality • Use balance activities to demonstrate equality and inequality	**NUMBER** **Number Relationships** https://www.moe.gov.tt/core-skills-4/ **Addition** https://learn.moe.gov.tt/mod/url/view.php?id=6339 https://www.youtube.com/watch?v=AaxrqDuw1Xk https://www.youtube.com/watch?v=uQiUTFO78Jk https://www.k5learning.com/worksheets/math/grade-1-adding-2-numbers-sum-under-20-a.pdf https://www.youtube.com/watch?v=luw31Y66eyU https://www.youtube.com/watch?v=PUY072JHE4g https://www.k5learning.com/worksheets/kindergarten-adding-pictures-sums-to-20-1.pdf https://www.k5learning.com/free-preschool-kindergarten-worksheets/addition/addition-vertical-sums-to-20 https://www.youtube.com/watch?v=QCO7SA7sRXs https://www.youtube.com/watch?v=tVHOBVAFjUw **Subtraction** https://learn.moe.gov.tt/mod/url/view.php?id=6342 https://learn.moe.gov.tt/mod/url/view.php?id=6343 https://www.k5learning.com/worksheets/math/grade-1-subtraction-up-to-20-no-regrouping-a.pdf

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Count objects in sets to demonstrate equality and inequality of sets • Use the language and symbols associated with the concept of equality • Draw sets to show equal and unequal amounts and record the number of items • Use the symbol to record equalities • Solve problems involving addition and subtraction and using balance activities and the concept of equality **Addition** • Solve one-step real-life addition problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) involving 2 addends and 3 addends with a sum less than or equal to 20 and using a variety of problem solving strategies such as, use a model, act it out, draw a picture and look for a pattern • Solve problems presented in horizontal and vertical arrangements • Record addition pictorially and symbolically using number sentences (words and symbols). E.g. 13 plus 2 is 15; 13 add 2 is equal to 15; 13 add 2 equals 15; 13 + 2 = 15 • Describe what happens to a group after addition • Use the number line to solve addition problems	https://www.k5learning.com/worksheets/kindergarten-subtraction-1-digit-from-20-no-borrow-v1.pdf https://www.youtube.com/watch?v=0bxECUpuDaw https://www.youtube.com/watch?v=4Fh4KOxsdos https://www.youtube.com/watch?v=RcnuYy9Y_Ng&t=53s **Mental Mathematics** https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) **GEOMETRY** **Solids and Plane Shapes** https://learn.moe.gov.tt/mod/resource/view.php?id=6197 (integration) https://www.moe.gov.tt/core-skills-4/ (constructing models using solids) https://www.moe.gov.tt/mapping-your-immediate-worlds-revised-2/ (integration) https://www.moe.gov.tt/the-built-community/ (integration) https://www.moe.gov.tt/core-skills-4/ (describing solids) https://www.youtube.com/watch?v=guNdJ5MtX1A https://www.youtube.com/watch?v=cNlthXnbRfU **Geometrical Patterns** https://www.moe.gov.tt/core-skills-4/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=uCV6P5vcvgs (parts can be used) https://www.youtube.com/watch?v=a4f8NrJOCw8

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Use the count on strategy to solve addition problems **Subtraction** • Solve one-step real-life subtraction problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) with minuend less than or equal to 20 and using a variety of problem-solving strategies such as, use a model, act it out, draw a picture and look for a pattern • Solve problems involving subtraction represented in vertical and horizontal arrangements • Record subtraction pictorially and symbolically using number sentences (words and symbols) e.g. 15 take away 2 equals 13, 15 – 2 = 13 • Describe what happens to a group after subtraction from • Use the number line to solve subtraction problems • Use the count back and count on strategies to solve subtraction problems **Mental Mathematics** • Solve problems using mental strategies, such as: o Addition and subtraction facts o Add-one and subtract-one as it relates to forward and backward counting o Add-zero and subtract-zero facts	**MEASUREMENT** **Length** https://www.moe.gov.tt/core-skills-4/ https://www.moe.gov.tt/the-built-community/ (integration) https://www.youtube.com/watch?v=1fag0bfQVaQ https://www.youtube.com/watch?v=XsLz-icSu5g (If the shoe fits-a story) https://learn.moe.gov.tt/mod/url/view.php?id=6520 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6521 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6523 (non-standard units) https://www.bbc.co.uk/bitesize/articles/zbwc92p (non-standard units) http://eduplace.com/kids/hmm/practice/1/ep1_07.html (non-standard units) **Weight/Mass** https://learn.moe.gov.tt/mod/url/view.php?id=6344 https://learn.moe.gov.tt/mod/url/view.php?id=6346 https://www.moe.gov.tt/food/ (integration) https://www.youtube.com/watch?v=cgmcEIJ5664 **Time** https://www.youtube.com/watch?v=dY2tUgX0UkU (calendar - parts can be used) https://www.teacherspayteachers.com/Product/Measuring-Time-using-Non-Standard-Units-4848388 (non-standard units - use ideas)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	○ Count on / count back ○ 'Make Ten' (think addition) • Associate addition and subtraction to forward and backward counting **GEOMETRY** **Solids and Plane Shapes** • Construct models using solids and plane shapes and describe composition of model • Recognize and name solids and plane shapes in pictorial representations • Compare solids and plane shapes by stating similarities and differences • Select from a given set of solids or plane shapes: ○ Solids or plane shapes that are the same ○ Solids or plane shapes that are alike/similar ○ Solids or plane shapes that are different and explain reason(s) for selection **Geometrical Patterns** • Describe growing/increasing patterns and identify the pattern rule • Use the pattern rule to extend the growing/increasing pattern • Create growing/increasing patterns using solids or plane shapes (concrete and pictorial) **MEASUREMENT** **Length** • Measure lengths and distances using arbitrary/non-standard units **Weight/Mass**	https://mrsfeere.wordpress.com/2016/05/26/measuring-time-with-non-standard-unit/ (non-standard units - use ideas) **STATISTICS** **Pictographs** https://learn.moe.gov.tt/mod/resource/view.php?id=7145 https://www.moe.gov.tt/1-myself-my-family-my-friends-revised/ (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=810 (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=9227 https://learn.moe.gov.tt/mod/url/view.php?id=6370 https://learn.moe.gov.tt/mod/resource/view.php?id=6198 (integration) https://www.moe.gov.tt/core-skills-4/ https://learn.moe.gov.tt/mod/url/view.php?id=6347 https://learn.moe.gov.tt/mod/url/view.php?id=6370 https://www.moe.gov.tt/celebrations-song-dance-drama-revised/ (integration) https://www.moe.gov.tt/transport/ (integration)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Compare objects according to mass/weight using an equal arm balance and appropriate vocabulary • Discuss observations of the equal arm balance when objects are placed in the pans • Use pictorial representations of equal arm balances to determine which object is heavy or light **Time** • Measure the duration of activities using non-standard units • Interpret calendars **STATISTICS** **Pictographs** • Collect and classify data to make decisions based on a real-life situation or problem • Identify features of pictographs • Construct pictographs (with and without grid, vertical and horizontal arrangements) based on real-life problems or situations • Interpret pictographs based on a real-life problem or situation • Make informed decisions based on data analysed • Communicate findings and decisions using appropriate vocabulary	
Term III	**NUMBER** **Number Concepts**	**NUMBER** **Addition** https://learn.moe.gov.tt/mod/url/view.php?id=6339 https://www.youtube.com/watch?v=AaxrqDuw1Xk

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Use 10 as a reference or benchmark in the formation of numbers from 11 to 20 e.g. 'seventeen is seven more than ten' • Estimate a given quantity using 10 as a benchmark and verify by counting • Order objects and use appropriate language to describe its position up to tenth • Explore the value of coins and bills (up to 25¢, up to $20) e.g. 25 cents is worth more than 5 cents (use the idea of purchase of items priced at 5 cents and how many can be bought) • Use the language of money in role-playing situations involving the exchange of goods for money (exact value of the coins and bills, one item and receive change) • State the equivalence of coins and bills up to 25 cents and 20 dollars **Number Relationships** • Explore the equality of sets involving addition and subtraction and using objects of the same size and mass/weight but different colours, and the balance scale, e.g. 2 red balls and 3 green balls are placed on one pan and students determine the amount of blue balls to place on the other side to show equality (verify by counting) • Solve problems involving addition and subtraction and using balance activities and the concept of equality	https://www.youtube.com/watch?v=uQiUTFO78Jk https://www.k5learning.com/worksheets/math/grade-1-adding-2-numbers-sum-under-20-a.pdf https://www.youtube.com/watch?v=luw31Y66eyU https://www.youtube.com/watch?v=PUY072JHE4g https://www.k5learning.com/worksheets/kindergarten-adding-pictures-sums-to-20-1.pdf https://www.k5learning.com/free-preschool-kindergarten-worksheets/addition/addition-vertical-sums-to-20 https://www.youtube.com/watch?v=QCO7SA7sRXs https://www.youtube.com/watch?v=tVHOBVAFjUw **Subtraction** https://learn.moe.gov.tt/mod/url/view.php?id=6342 https://learn.moe.gov.tt/mod/url/view.php?id=6343 https://www.k5learning.com/worksheets/math/grade-1-subtraction-up-to-20-no-regrouping-a.pdf https://www.k5learning.com/worksheets/kindergarten-subtraction-1-digit-from-20-no-borrow-v1.pdf https://www.youtube.com/watch?v=0bxECUpuDaw https://www.youtube.com/watch?v=4Fh4KOxsdos https://www.youtube.com/watch?v=RcnuYy9Y_Ng&t=53s **Mental Mathematics** https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10) **GEOMETRY** **Geometrical Patterns**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Addition • Solve one-step real-life addition problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) involving 2 addends and 3 addends with a sum less than or equal to 20 and using a variety of problem-solving strategies such as, use a model, act it out, draw a picture and look for a pattern • Solve problems presented in horizontal and vertical arrangements • Record addition pictorially and symbolically using number sentences (words and symbols). E.g. 13 plus 2 is 15; 13 add 2 is equal to 15; 13 add 2 equals 15; 13 + 2 = 15 • Describe what happens to a group after addition • Use the number line to solve addition problems • Use the count on strategy to solve addition problems • Create number stories involving addition using appropriate vocabulary (including the language of money) **Subtraction** • Solve one-step real-life subtraction problems presented orally, pictorially or symbolically (using concrete materials, whole number and money) with minuend less than or equal to 20 and using a variety of problem-solving	https://www.moe.gov.tt/core-skills-4/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=uCV6P5vcvgs (parts can be used) https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Length** https://learn.moe.gov.tt/mod/resource/view.php?id=8591 https://learn.moe.gov.tt/mod/url/view.php?id=6520 https://learn.moe.gov.tt/mod/url/view.php?id=6521 https://learn.moe.gov.tt/mod/url/view.php?id=6523 https://www.moe.gov.tt/my-country-the-past/ (integration) https://learn.moe.gov.tt/mod/resource/view.php?id=6195 (integration) https://www.youtube.com/watch?v=1fag0bfQVaQ https://www.youtube.com/watch?v=XsLz-icSu5g (If the shoe fits-a story) https://learn.moe.gov.tt/mod/url/view.php?id=6520 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6521 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6523 (non-standard units) https://www.bbc.co.uk/bitesize/articles/zbwc92p (non-standard units) http://eduplace.com/kids/hmm/practice/1/ep1_07.html (non-standard units) **Weight/Mass** https://learn.moe.gov.tt/mod/url/view.php?id=6344

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	strategies such as, use a model, act it out, draw a picture and look for a pattern • Solve problems involving subtraction represented in vertical and horizontal arrangements • Record subtraction pictorially and symbolically using number sentences (words and symbols) e.g. 15 take away 2 equals 13, 15 – 2 = 13 • Describe what happens to a group after subtraction from • Use the number line to solve subtraction problems • Use the count back and count on strategies to solve subtraction problems • Create number stories involving subtraction using appropriate vocabulary (including the language of money) **Mental Mathematics** • Solve problems using mental strategies, such as: o Addition and subtraction facts o Add-one and subtract-one as it relates to forward and backward counting o Add-zero and subtract-zero facts o Count on / count back o 'Make Ten' (think addition) • Associate addition and subtraction to forward and backward counting **GEOMETRY**	https://learn.moe.gov.tt/mod/url/view.php?id=6346 https://www.moe.gov.tt/food/ (integration) https://www.youtube.com/watch?v=cgmcEIJ5664 **Time** https://www.youtube.com/watch?v=dY2tUgX0UkU (calendar - parts can be used) https://www.teacherspayteachers.com/Product/Measuring-Time-using-Non-Standard-Units-4848388 (non-standard units - use ideas) https://mrsfeere.wordpress.com/2016/05/26/measuring-time-with-non-standard-unit/ (non-standard units - use ideas) **STATISTICS** **Pictographs** https://learn.moe.gov.tt/mod/url/view.php?id=6370 https://www.moe.gov.tt/transport/ (integration)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Solids and Plane Shapes • Solve problems involving solids and plane shapes e.g. How many different shapes can you make using 6 blocks? **Geometrical Patterns** • Describe growing/increasing patterns and identify the pattern rule • Use the pattern rule to extend the growing/increasing pattern • Create growing/increasing patterns using solids or plane shapes (concrete and pictorial) **MEASUREMENT** **Length** • Measure lengths and distances using arbitrary/non-standard units • Compare and order objects and distances according to length and explain reasoning using appropriate vocabulary **Weight/Mass** • Compare objects according to mass/weight using an equal arm balance and appropriate vocabulary • Discuss observations of the equal arm balance when objects are placed in the pans • Use pictorial representations of equal arm balances to determine which object is heavy or light **Time** • Measure the duration of activities using non-standard units	

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Compare the time taken for activities or events to occur or the duration of activities (starting at the same time) and order the duration of activities and explain reasoning using appropriate vocabulary • Interpret calendars **STATISTICS** **Pictographs** • Collect and classify data to make decisions based on a real-life situation or problem • Identify features of pictographs • Construct pictographs (with and without grid, vertical and horizontal arrangements) based on real-life problems or situations • Interpret pictographs based on a real-life problem or situation • Make informed decisions based on data analysed • Communicate findings and decisions using appropriate vocabulary	

CLASS: Standard ONE

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Number Concepts** • Rote count to 1000 in ascending and descending order (including skip counting) • Understand the concept of numbers to 100 • Count objects to demonstrate one to-one correspondence (up to 100) • Count objects in different arrangements to demonstrate conservation of number • Match the number names and numerals to the quantities they represent up to 100 • Sequence number names and numerals • Insert missing numbers on a number line, number chart and number sequence • Read and write number names and numerals • Explore the value of coins and bills (up to $100) and their equivalence (practical activities) • Write specified amounts of money using the notation for dollars and cents **Number Patterns** • Distinguish between repeating patterns and non-repeating patterns in a given set by identifying the part that repeats or errors • Explore patterns using repetitions of 3-5 elements	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/url/view.php?id=6497 (skip counting) https://learn.moe.gov.tt/mod/url/view.php?id=6498 (skip counting) https://numberock.com/lessons/skip-counting-by-10/ (skip counting in tens) https://www.youtube.com/watch?v=EemjeA2Djjw (skip counting in fives) https://www.bbc.co.uk/bitesize/clips/z3cmpv4 (counting in pairs) https://www.bbc.co.uk/bitesize/articles/z2xfxbk (counting to 100) https://www.aaamath.com/g14c_nx1.htm (counting to 100) https://www.youtube.com/watch?v=bGetqbqDVaA (Counting to 100) https://mrnussbaum.com/what-number-am-i-version-1-online (number concept) https://uk.ixl.com/math/year-2 (counting) https://mrnussbaum.com/the-amazing-number-chart-online (counting) http://eduplace.com/kids/hmm/practice/2/ep2_01.html (counting) http://eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=1cc_prim&title=Counters&grade=2 (counting)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Recognise and explore number patterns up to 100 • Describe a given repeating pattern containing three to five elements in its core • Determine the pattern rule and extend the repeating pattern using concrete materials, pictorial representation or symbols • Name a repeating pattern containing three to five elements in its core • Create repeating number patterns and explain the pattern rule **Addition and Subtraction** • Solve one-step and two-step real-life problems involving addition and subtraction presented orally, pictorially and symbolically (using concrete materials, whole number and money) and using a variety of problem-solving strategies such as, use a model, act it out, draw a picture, look for a pattern, work backwards and guess and check • Perform addition up to 3 addends within 99 (vertical and horizontal arrangements, no algorithm) • Perform subtraction within 99 (vertical and horizontal arrangements, no algorithm) • Check answers to addition and subtraction problems by using the reverse operation • Use the language of money in role playing situations involving the exchange of goods for money (one item, more than one item, without	http://eduplace.com/kids/hmm/practice/1/ep1_04.html (counting, skip counting) https://learn.moe.gov.tt/mod/url/view.php?id=6500 (counting, reading and writing numbers) https://learn.moe.gov.tt/mod/url/view.php?id=6491 (numerical order) https://learn.moe.gov.tt/mod/url/view.php?id=6499 (numeral and number name) https://learn.moe.gov.tt/mod/url/view.php?id=6501 (numeral and number name) https://learn.moe.gov.tt/mod/url/view.php?id=6506 (numeral and number name) https://www.internet4classrooms.com/skills_1st_math_new.htm (number and operations) https://www.commoncoresheets.com/SortedByGrade.php (number and operations in base ten) https://www.abcya.com/ (number games) https://learn.moe.gov.tt/mod/resource/view.php?id=7335 (worksheet: skip counting, numerical order) https://learn.moe.gov.tt/mod/url/view.php?id=6496 (ascending and descending order) https://learn.moe.gov.tt/mod/url/view.php?id=6494 (descending/decreasing order) https://learn.moe.gov.tt/mod/resource/view.php?id=7044 (worksheet: money-equivalence, notation, problems) https://www.moe.gov.tt/entrepreneurship-work-leisure-revised/ (integration-buying and selling, let's count) (teacher resource) https://educators.brainpop.com/bp-jr-topic/dollars-and-cents/ (money-use ideas) (teacher resource) **Number Patterns**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	and with change, limited to dollars only or cents only) • Create number stories **Mental Mathematics** • Use a variety of mental math strategies and recording strategies to solve problems involving addition and subtraction including: o The commutative property for addition o The associative property for addition o Add-two/subtract-two o Double facts o Ten facts (combining numbers that add to 10 e.g. 6 + 8 + 2; group 8 and 2 first) o Related addition and subtraction facts, e.g. 15 + 3 = 18, so 18 – 15 = 3; 5 – 2 = 3, so 50 – 20 is 30 o Thinking of addition e.g. make ten o Counting on and back o Skip counting **GEOMETRY** **Solids and Plane Shapes** • Classify, describe, compare and name solids and give reasons for classification (cube, cuboid, cylinder, cone, sphere and pyramid – with a focus on naming the different types of pyramids) • Describe and compare solids and plane shapes in concrete and pictorial forms using formal language **Geometrical Patterns**	https://learn.moe.gov.tt/mod/resource/view.php?id=5079 (integration - idea can be used to create a repeating pattern, replacing tempo with a number) (teacher resource) https://educators.brainpop.com/lesson-plan/patterns-activities-for-kids/?bp-jr-topic=patterns (teacher resource) **Addition and Subtraction** https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zkgjpg8 (addition) https://www.mathplayground.com/ASB_Canoe_Puppies.html (addition) https://www.mathplayground.com/tb_addition/index.html (addition) https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ (addition) http://eduplace.com/cgi bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=connectingcubes&title=Connecting%20Cubes&grade=2 (addition) https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-add-subtract-100/cc-2nd-math-strategies-for-adding-within-100/v/example-exercises-on-ways-to-add-two-digit-numbers?modal=1 (addition) http://eduplace.com/kids/hmm/practice/2/ep2_04.html (addition) https://mrnussbaum.com/fun-addition-games-from-computermice (addition game) http://eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=nmbl_prim&title=Number%20Line&grade=2 (addition and subtraction using the number line)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Distinguish between repeating and non-repeating patterns in a given set involving solids or plane shapes by identifying the part that repeats or error • Explore patterns using plane shapes and solids • Describe a given repeating pattern containing three to five elements in its core • Determine the pattern rule and extend the repeating pattern using concrete materials or pictorial representations • Insert the missing elements in given patterns (concrete or pictorial) and explain reasoning • Name a repeating pattern containing three to five elements in its core • Create patterns using solids or plane shapes (repeating – 3 to 5 elements) **MEASUREMENT** **Length** • Measure, record, compare and order length, using non-standard units • Explore activities to explain that the size of the unit used in measuring relates to the number of units used • Explain why one non-standard unit may be a better choice for measuring than the other **Time** • Measure, record, compare and order duration of activities (time) using non-standard units	https://www.mathlearningcenter.org/resources/apps/number-line (addition and subtraction using the number line) http://eduplace.com/kids/hmm/practice/2/ep2_05.html (subtraction) https://mrnussbaum.com/fun-subtraction-games-from-computermice (subtraction game) https://www.mathplayground.com/superhero_subtraction.html (subtraction) https://learn.moe.gov.tt/mod/url/view.php?id=6514 (addition and subtraction) https://uk.ixl.com/math/year-2 (addition and subtraction) http://eduplace.com/kids/hmm/bt/1/1_02-1q.html (addition and subtraction brain teaser) https://learn.moe.gov.tt/mod/url/view.php?id=6519 (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_01.html (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_08.html (addition and subtraction) https://apps.mathlearningcenter.org/number-frames/ (addition and subtraction) https://www.abcya.com/ (addition and subtraction games) https://learn.moe.gov.tt/mod/resource/view.php?id=7951 (worksheet: addition and subtraction) https://www.commoncoresheets.com/SortedByGrade.php (number and operations in base ten) https://www.mathplayground.com/wpdatabase/wpindex.html (addition and subtraction problems) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Explore activities to explain that the size of the unit used in measuring relates to the number of units used • Explain why one non-standard unit may be a better choice for measuring than the other **Capacity** • Understand the concept of capacity o Sort objects into "can put things into" (containers) and "cannot put things into" and explain reasons o Explore containers by filling and emptying and describe using the language associated with capacity (e.g. empty/full, nearly full) so as to develop the concept of capacity o Describe capacity as the measure of the amount a container can hold • Compare the capacity of two containers by filling and emptying (using materials such as water and sand) into each other (or by filling and emptying into a larger container and marking each level) and give reasons using appropriate language **STATISTICS** **Pictographs** • Collect and classify data to make decisions based on a real-life situation or problem • Identify features of pictographs • Construct pictographs using appropriate symbolic representations	https://www.internet4classrooms.com/skills_1st_math_new.htm (number and operations) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa1 (addition and subtraction worksheets) https://educators.brainpop.com/lesson-plan/choosing-operation-activities-kids/?bp-jr-topic=choosing-an-operation (addition and subtraction-use ideas) (teacher resource) https://jr.brainpop.com/math/mathstrategies/solvingwordproblems/ (word problems-use ideas) (teacher resource) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=G05AgnEGmgw **Mental Mathematics** https://www.bbc.co.uk/bitesize/articles/zyd28hv (number bonds to 10) https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zvv86v4 (addition using number bonds) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction mental strategies) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa2 (add and subtract using mental strategies) http://eduplace.com/kids/hmm/practice/1/ep1_02.html (addition and subtraction facts) http://eduplace.com/kids/hmm/practice/2/ep2_01.html (addition and subtraction facts) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Interpret data from pictographs based on a real-life problem or situation • Make informed decisions based on data analysed • Justify decisions made using data collected in writing and/or oral presentations	**GEOMETRY** **Solids and Plane Shapes** https://uk.ixl.com/math/year-2/name-the-three-dimensional-shape (solid shapes) https://numberock.com/lessons/3-d-shapes/ (solids-some content not applicable) https://educators.brainpop.com/bp-jr-topic/solid-shapes/ (solids) (teacher resource) https://www.bbc.co.uk/bitesize/topics/zjv39j6/articles/zcsjqty (solid shapes-use some ideas) http://eduplace.com/kids/hmm/practice/1/ep1_03.html (solids and plane shapes) https://www.bbc.co.uk/bitesize/topics/zbtp34j/articles/zjjkpg8 (solids and plane shapes) https://uk.ixl.com/math/year-2 (shapes and solids) https://learn.moe.gov.tt/mod/url/view.php?id=6297 (plane shapes) https://jr.brainpop.com/math/geometry/planeshapes/ (plane shapes) https://www.bbc.co.uk/bitesize/topics/zjv39j6/articles/ztpwdmn (plane shapes-use some ideas) https://www.mathplayground.com/geoboard.html (draw shapes) https://uk.ixl.com/math/year-2 (shapes and solids) https://www.moe.gov.tt/my-country-the-past/ (integration-constructing a village) (teacher resource) https://www.youtube.com/watch?v=cNlthXnbRfU https://www.youtube.com/watch?v=d_6nMZRiCYs https://www.youtube.com/watch?v=2cg-Uc556-Q **Geometrical Patterns** https://www.bbc.co.uk/bitesize/articles/z338bqt (patterns)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		http://eduplace.com/kids/hmm/practice/1/ep1_03.html (patterns) https://www.mathplayground.com/pattern-blocks.html (create patterns) https://apps.mathlearningcenter.org/number-frames/ (create patterns) https://apps.mathlearningcenter.org/pattern-shapes/ (create patterns) https://educators.brainpop.com/bp-jr-topic/patterns/ (patterns) (teacher resource) **MEASUREMENT** **Length** https://learn.moe.gov.tt/mod/url/view.php?id=6520 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6521 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6523 (non-standard units) https://www.bbc.co.uk/bitesize/articles/zbwc92p (non-standard units) http://eduplace.com/kids/hmm/practice/1/ep1_07.html (non-standard units) http://eduplace.com/kids/hmm/practice/templates/rules.jsp?ID=hmm07_ep/gr2/1701&GRADE=2&UNIT=7&CHAPTER=17&LESSON=1&UNIT_TITLE=Measurement&CHAPTER_TITLE=Length (non-standard units) https://www.youtube.com/watch?v=2IAl5R23rco https://www.youtube.com/watch?v=1fag0bfQVaQ https://learn.moe.gov.tt/mod/resource/view.php?id=8591 (worksheet: non-standard units) https://uk.ixl.com/math/year-2 (measurement)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		https://www.moe.gov.tt/my-country-the-past/ (integration-constructing a village) (teacher resource) https://educators.brainpop.com/bp-jr-topic/nonstandard-measurement/ (non-standard measure) (teacher resource) **Time** https://www.teacherspayteachers.com/Product/Measuring-Time-using-Non-Standard-Units-4848388 (non-standard units - use ideas) https://mrsfeere.wordpress.com/2016/05/26/measuring-time-with-non-standard-unit/ (non-standard units - use ideas) **Capacity** https://www.bbc.co.uk/bitesize/topics/zt9k7ty/articles/zp8crdm (empty to full) https://www.youtube.com/watch?v=mHK3D2Y_YU4 (capacity) https://uk.ixl.com/math/year-2 (measurement) https://www.youtube.com/watch?v=TkXxn0bJ4r0 (capacity-use ideas) http://eduplace.com/kids/hmm/practice/1/ep1_07.html (capacity) **STATISTICS** **Pictographs** https://learn.moe.gov.tt/mod/url/view.php?id=6527 https://uk.ixl.com/math/year-2/interpret-pictograms (interpret pictographs) https://uk.ixl.com/math/year-2 (pictographs) http://eduplace.com/kids/hmm/practice/1/ep1_01.html (pictographs) http://eduplace.com/kids/hmm/practice/templates/rules.jsp?ID=hmm07_ep/gr2/0402&GRADE=2&UNIT=1&CHAPTER=4&LE

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		SSON=2&UNIT_TITLE=Number%20Concepts,%20Addition,%20Subtraction,%20and%20Graphing&CHAPTER_TITLE=Data,%20Graphing,%20and%20Probability (pictographs) https://educators.brainpop.com/bp-jr-topic/pictographs/ (pictographs) (teacher resource) https://learn.moe.gov.tt/mod/resource/view.php?id=5875 (integration - idea from Agricultural Science can be used to create pictographs) (teacher resource) https://learn.moe.gov.tt/mod/resource/view.php?id=5754 (integration - Spanish names can be reinforced in appropriate pictograph) (teacher resource) https://www.moe.gov.tt/entrepreneurship-work-leisure-revised/ (integration-creating a pictograph) (teacher resource)
Term II	**NUMBER** **Number Concepts** • Rote count to 1000 in ascending and descending order • Order objects, pictures and events and use appropriate language to describe positions up to twentieth • Differentiate between odd and even numbers • Estimate the number of objects in a set using 20 as the benchmark and verify by counting • State the equivalence of coins (only) and bills (only) up to 100 dollars using practical activities **Place Value** • Demonstrate an understanding of place value and value up to 99 (concretely, pictorially and symbolically)	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/resource/view.php?id=7335 https://learn.moe.gov.tt/mod/url/view.php?id=6498 https://learn.moe.gov.tt/mod/url/view.php?id=6508 https://learn.moe.gov.tt/mod/url/view.php?id=6509 https://www.youtube.com/watch?v=3iQqmmG8wQQ (odd and even reinforcement-parts can be used) **Place Value** https://learn.moe.gov.tt/mod/resource/view.php?id=7520 https://learn.moe.gov.tt/mod/url/view.php?id=6493 https://learn.moe.gov.tt/mod/url/view.php?id=6495 https://www.youtube.com/watch?v=_dHu5TFxPtk (reinforcement) **Number Patterns** https://learn.moe.gov.tt/mod/resource/view.php?id=7895

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Compare and order numerals up to 99 in ascending and descending order **Number Patterns** • Explore increasing and decreasing patterns up to 100 • Describe and extend simple number patterns that increase or decrease using the pattern rule • Create increasing and decreasing number patterns and explain the pattern rule • Develop number patterns involving addition and subtraction facts, add-zero/subtract-zero, the commutative property for addition, the associative property for addition, add-two/subtract-two, double facts, ten facts and odd and even numbers **Number Relationships** • Use balance activities to demonstrate equality and inequality • Count objects in sets to demonstrate equality and inequality of sets • Draw sets to show equal and unequal amounts and record the number of items • Use the equal symbol (=) or the not equal symbol (≠) to record equalities and inequalities • Explore equality involving addition and subtraction using equivalent number relationships	https://www.youtube.com/watch?v=yMHS_YX5Y4M **Addition and Subtraction** https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zkgjpg8 (addition) https://www.mathplayground.com/ASB_Canoe_Puppies.html (addition) https://www.mathplayground.com/tb_addition/index.html (addition) https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ (addition) http://eduplace.com/cgi bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=connectingcubes&title=Connecting%20Cubes&grade=2 (addition) https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-add-subtract-100/cc-2nd-math-strategies-for-adding-within-100/v/example-exercises-on-ways-to-add-two-digit-numbers?modal=1 (addition) http://eduplace.com/kids/hmm/practice/2/ep2_04.html (addition) https://mrnussbaum.com/fun-addition-games-from-computermice (addition game) http://eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=nmbl_prim&title=Number%20Line&grade=2 (addition and subtraction using the number line) https://www.mathlearningcenter.org/resources/apps/number-line (addition and subtraction using the number line) http://eduplace.com/kids/hmm/practice/2/ep2_05.html (subtraction)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve problems involving addition and subtraction using balance activities and counting • Determine whether a given number sentence is true or false using a balance scale and counting objects **Addition and Subtraction** • Solve one-step and two-step real-life problems involving addition and subtraction presented orally, pictorially and symbolically (using concrete materials, whole number and money) and using a variety of problem-solving strategies such as, use a model, act it out, draw a picture, look for a pattern, work backwards and guess and check • Perform addition up to 3 addends within 99 (vertical and horizontal arrangements, no algorithm) • Perform subtraction within 99 (vertical and horizontal arrangements, no algorithm) • Create number stories • Check answers to addition and subtraction problems by using the reverse operation • Use the language of money in role playing situations involving the exchange of goods for money (one item, more than one item, without and with change, limited to dollars only or cents only) **Multiplication**	https://mrnussbaum.com/fun-subtraction-games-from-computermice (subtraction game) https://www.mathplayground.com/superhero_subtraction.html (subtraction) https://learn.moe.gov.tt/mod/url/view.php?id=6514 (addition and subtraction) https://uk.ixl.com/math/year-2 (addition and subtraction) http://eduplace.com/kids/hmm/bt/1/1_02-1q.html (addition and subtraction brain teaser) https://learn.moe.gov.tt/mod/url/view.php?id=6519 (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_01.html (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_08.html (addition and subtraction) https://apps.mathlearningcenter.org/number-frames/ (addition and subtraction) https://www.abcya.com/ (addition and subtraction games) https://learn.moe.gov.tt/mod/resource/view.php?id=7951 (worksheet: addition and subtraction) https://www.commoncoresheets.com/SortedByGrade.php (number and operations in base ten) https://www.mathplayground.com/wpdatabase/wpindex.html (addition and subtraction problems) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction) https://www.internet4classrooms.com/skills_1st_math_new.htm (number and operations) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa1 (addition and subtraction worksheets)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve problems involving repeated addition (concept of multiplication, no symbol, up to 10 addends) • Explain or demonstrate how answers were obtained when solving problems • Record solutions to problems using a variety of formats • Create number stories **Mental Mathematics** • Use a variety of mental math strategies and recording strategies to solve problems involving addition and subtraction including: o The commutative property for addition o The associative property for addition o Add-two/subtract-two o Double facts o Ten facts (combining numbers that add to 10 e.g. 6 + 8 + 2; group 8 and 2 first) o Related addition and subtraction facts, e.g. 15 + 3 = 18, so 18 – 15 = 3; 5 – 2 = 3, so 50 – 20 is 30 o Thinking of addition e.g. make ten o The jump strategy, e.g. 53 + 25; 53 + 20 = 73, 53 + 5 = 78 o Bridging to tens strategy e.g. 18 + 6; 18 and 2 is 20 and add 4 more o Counting on and back o Skip counting **GEOMETRY** **Solids and Plane Shapes**	https://educators.brainpop.com/lesson-plan/choosing-operation-activities-kids/?bp-jr-topic=choosing-an-operation (addition and subtraction-use ideas) (teacher resource) https://jr.brainpop.com/math/mathstrategies/solvingwordproblems/ (word problems-use ideas) (teacher resource) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=G05AgnEGmgw https://www.youtube.com/watch?v=QCO7SA7sRXs **Multiplication** https://learn.moe.gov.tt/mod/resource/view.php?id=8466 **Mental Mathematics** https://www.bbc.co.uk/bitesize/articles/zyd28hv (number bonds to 10) https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zvv86v4 (addition using number bonds) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction mental strategies) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa2 (add and subtract using mental strategies) http://eduplace.com/kids/hmm/practice/1/ep1_02.html (addition and subtraction facts) http://eduplace.com/kids/hmm/practice/2/ep2_01.html (addition and subtraction facts) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Identify plane shapes as faces of solids in the environment and in an assortment of solids • Match cut-outs of plane shapes to faces of solids • Trace the faces of solids and name the shapes drawn • Use plane shapes to create solids and state the relationship between solids and plane shapes • Identify solids and plane shapes in different orientations (concrete and pictorial) and via the sense of touch **Geometrical Patterns** • Describe growing/increasing or decreasing patterns and extend the pattern using the pattern rule • Create patterns using solids or plane shapes (growing or increasing and decreasing patterns) • Insert the missing elements in given patterns (concrete or pictorial) and explain reasoning **MEASUREMENT** **Length** • Estimate length using non-standard units and verify results **Weight/Mass** • Measure, record, compare and order mass/weight, using non-standard units • Explore activities to explain that the size of the unit used in measuring relates to the number of units used	**GEOMETRY** **Solids and Plane Shapes** https://uk.ixl.com/math/year-2/name-the-three-dimensional-shape (solid shapes) https://numberock.com/lessons/3-d-shapes/ (solids-some content not applicable) https://educators.brainpop.com/bp-jr-topic/solid-shapes/ (solids) (teacher resource) https://www.bbc.co.uk/bitesize/topics/zjv39j6/articles/zcsjqty (solid shapes-use some ideas) http://eduplace.com/kids/hmm/practice/1/ep1_03.html (solids and plane shapes) https://www.bbc.co.uk/bitesize/topics/zbtp34j/articles/zjjkpg8 (solids and plane shapes) https://uk.ixl.com/math/year-2 (shapes and solids) https://learn.moe.gov.tt/mod/url/view.php?id=6297 (plane shapes) https://jr.brainpop.com/math/geometry/planeshapes/ (plane shapes) https://www.bbc.co.uk/bitesize/topics/zjv39j6/articles/ztpwdmn (plane shapes-use some ideas) https://www.mathplayground.com/geoboard.html (draw shapes) https://uk.ixl.com/math/year-2 (shapes and solids) https://www.moe.gov.tt/my-country-the-past/ (integration-constructing a village) (teacher resource) https://www.youtube.com/watch?v=cNlthXnbRfU https://www.youtube.com/watch?v=d_6nMZRiCYs https://www.youtube.com/watch?v=2cg-Uc556-Q https://learn.moe.gov.tt/mod/resource/view.php?id=7090 https://learn.moe.gov.tt/mod/url/view.php?id=7926 (reinforcement)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Explain why one non-standard unit may be a better choice for measuring than the other **Time** • Explain the need for and the importance of a standard unit of measure for time • State units of measure of time that they are familiar with e.g. minutes, hours and the instrument used to measure (clock) • Identify the features of the analog clock and the function of the hands (second, minute and hour) • Explain the meaning of the movement of the hands on a clock (seconds and minutes) • Measure the duration of events in minutes and seconds using a clock with a second hand and a minute hand • Measure, record, compare and order duration of activities (time) using standard units • State/name activities/events which occur in seconds and minutes (up to 5 minutes) **Capacity** • Measure, record, compare and order capacity using non-standard units • Explore activities to explain that the size of the unit used in measuring capacity relates to the number of units used • Explain why one non-standard unit may be a better choice for measuring capacity than the other (e.g. a cup may be better than a spoon when measuring the capacity of a bucket;	https://learn.moe.gov.tt/mod/url/view.php?id=7927 (reinforcement) **Geometrical Patterns** https://www.moe.gov.tt/core-skills-4/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=uCV6P5vcvgs (parts can be used) https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Length** https://learn.moe.gov.tt/mod/url/view.php?id=6520 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6521 (non-standard units) https://learn.moe.gov.tt/mod/url/view.php?id=6523 (non-standard units) https://www.bbc.co.uk/bitesize/articles/zbwc92p (non-standard units) http://eduplace.com/kids/hmm/practice/1/ep1_07.html (non-standard units) **Weight/Mass** https://www.youtube.com/watch?v=2IAl5R23rco **Time** https://learn.moe.gov.tt/mod/url/view.php?id=6525 https://learn.moe.gov.tt/mod/url/view.php?id=6526 **STATISTICS** **Tally Charts**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	cubes may be better than cones when measuring capacity as they pack and stack better and leave no gaps) **STATISTICS** **Tally Charts** • Collect and classify data to make decisions based on a real-life situation or problem • Identify features of tally charts • Construct tally charts using appropriate symbolic representations • Interpret data from tally charts based on a real-life problem or situation • Make informed decisions based on data analysed • Justify decisions made using data collected in writing and/or oral presentations	https://learn.moe.gov.tt/mod/url/view.php?id=6527
Term III	**NUMBER** **Number Concepts** • Estimate the number of objects in a set using 20 as the benchmark and verify by counting **Place Value and Rounding** • Demonstrate an understanding of place value and value up to 99 (concretely, pictorially and symbolically) • Write numbers using the expanded notation form • Convert expanded notation into numerals • Compare and order numerals up to 99 in ascending and descending order • Round numbers to the nearest "ten"	**NUMBER** **Place Value and Rounding** https://learn.moe.gov.tt/mod/url/view.php?id=6493 https://learn.moe.gov.tt/mod/url/view.php?id=6500 https://learn.moe.gov.tt/mod/url/view.php?id=6511 https://learn.moe.gov.tt/mod/resource/view.php?id=7520 https://learn.moe.gov.tt/mod/url/view.php?id=6495 https://www.youtube.com/watch?v=_dHu5TFxPtk (reinforcement) **Number Patterns** https://learn.moe.gov.tt/mod/resource/view.php?id=7895 https://www.youtube.com/watch?v=yMHS_YX5Y4M

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Number Patterns • Explore increasing and decreasing patterns up to 100 • Describe and extend simple number patterns that increase or decrease using the pattern rule • Create increasing and decreasing number patterns and explain the pattern rule • Develop number patterns involving addition and subtraction facts, add-zero/subtract-zero, the commutative property for addition, the associative property for addition, add-two/subtract-two, double facts, ten facts and odd and even numbers **Addition and Subtraction** • Solve one-step and two-step real-life problems involving addition and subtraction presented orally, pictorially and symbolically (using concrete materials, whole number and money) and using a variety of problem solving strategies such as, use a model, act it out, draw a picture, look for a pattern, work backwards and guess and check • Perform addition up to 3 addends within 99 (vertical and horizontal arrangements, no algorithm) • Perform subtraction within 99 (vertical and horizontal arrangements, no algorithm) • Create number stories • Check answers to addition and subtraction problems by using the reverse operation	**Addition and Subtraction** https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zkgjpg8 (addition) https://www.mathplayground.com/ASB_Canoe_Puppies.html (addition) https://www.mathplayground.com/tb_addition/index.html (addition) https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ (addition) http://eduplace.com/cgi bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=connectingcubes&title=Connecting%20Cubes&grade=2 (addition) https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-add-subtract-100/cc-2nd-math-strategies-for-adding-within-100/v/example-exercises-on-ways-to-add-two-digit-numbers?modal=1 (addition) http://eduplace.com/kids/hmm/practice/2/ep2_04.html (addition) https://mrnussbaum.com/fun-addition-games-from-computermice (addition game) http://eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/hmm/manip/mn_popup.thtml&filename=nmbl_prim&title=Number%20Line&grade=2 (addition and subtraction using the number line) https://www.mathlearningcenter.org/resources/apps/number-line (addition and subtraction using the number line) http://eduplace.com/kids/hmm/practice/2/ep2_05.html (subtraction) https://mrnussbaum.com/fun-subtraction-games-from-computermice (subtraction game)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Use the language of money in role playing situations involving the exchange of goods for money (one item, more than one item, without and with change, limited to dollars only or cents only) **Multiplication** • Solve problems involving repeated addition (concept of multiplication, no symbol, up to 10 addends) • Explain or demonstrate how answers were obtained when solving problems • Record solutions to problems using a variety of formats • Create number stories **Division** • Solve problems involving sharing and grouping (concept of division, no symbol) • Explain or demonstrate how answers were obtained when solving problems • Record solutions to problems using a variety of formats • Create number stories **Mental Mathematics** • Use a variety of mental math strategies and recording strategies to solve problems involving addition and subtraction including: o The commutative property for addition o The associative property for addition o Add-two/subtract-two o Double facts	https://www.mathplayground.com/superhero_subtraction.html (subtraction) https://learn.moe.gov.tt/mod/url/view.php?id=6514 (addition and subtraction) https://uk.ixl.com/math/year-2 (addition and subtraction) http://eduplace.com/kids/hmm/bt/1/1_02-1q.html (addition and subtraction brain teaser) https://learn.moe.gov.tt/mod/url/view.php?id=6519 (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_01.html (addition and subtraction) http://eduplace.com/kids/hmm/practice/1/ep1_08.html (addition and subtraction) https://apps.mathlearningcenter.org/number-frames/ (addition and subtraction) https://www.abcya.com/ (addition and subtraction games) https://learn.moe.gov.tt/mod/resource/view.php?id=7951 (worksheet: addition and subtraction) https://www.commoncoresheets.com/SortedByGrade.php (number and operations in base ten) https://www.mathplayground.com/wpdatabase/wpindex.html (addition and subtraction problems) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction) https://www.internet4classrooms.com/skills_1st_math_new.htm (number and operations) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa1 (addition and subtraction worksheets) https://educators.brainpop.com/lesson-plan/choosing-operation-activities-kids/?bp-jr-topic=choosing-an-operation (addition and subtraction-use ideas) (teacher resource)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	○ Ten facts (combining numbers that add to 10 e.g. 6 + 8 + 2; group 8 and 2 first) ○ Related addition and subtraction facts, e.g. 15 + 3 = 18, so 18 – 15 = 3; 5 – 2 = 3, so 50 – 20 is 30 ○ Thinking of addition e.g. make ten ○ The jump strategy, e.g. 53 + 25; 53 + 20 = 73, 53 + 5 = 78 ○ The split strategy e.g. 43 + 52= 40 + 50 + 3 + 2 ○ Bridging to tens strategy e.g. 18 + 6; 18 and 2 is 20 and add 4 more ○ Counting on and back ○ Skip counting **GEOMETRY** **Solids and Plane Shapes** • Construct plane shapes and compare and describe their sides and corners and deduce the relationship between the number of sides and corners of plane shapes (not limited to triangles, squares and rectangles) • Solve problems involving solids and plane shapes **Geometrical Patterns** • Describe growing/increasing or decreasing patterns and extend the pattern using the pattern rule • Create patterns using solids or plane shapes (growing or increasing and decreasing patterns)	https://jr.brainpop.com/math/mathstrategies/solvingwordproblems/ (word problems-use ideas) (teacher resource) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=QCO7SA7sRXs https://www.youtube.com/watch?v=G05AgnEGmgw (decomposition) **Multiplication** https://learn.moe.gov.tt/mod/resource/view.php?id=8466 **Division** https://learn.moe.gov.tt/mod/resource/view.php?id=8466 **Mental Mathematics** https://www.bbc.co.uk/bitesize/articles/zyd28hv (number bonds to 10) https://www.bbc.co.uk/bitesize/topics/znj7hyc/articles/zvv86v4 (addition using number bonds) https://jr.brainpop.com/math/additionandsubtraction/ (addition and subtraction mental strategies) https://www.commoncoresheets.com/SortedByGrade.php?Sorted=2oa2 (add and subtract using mental strategies) http://eduplace.com/kids/hmm/practice/1/ep1_02.html (addition and subtraction facts) http://eduplace.com/kids/hmm/practice/2/ep2_01.html (addition and subtraction facts) https://www.youtube.com/watch?v=aK3FKEZJKec (relate addition and subtraction) https://www.youtube.com/watch?v=ch7KzI3n2Zk (number bonds to 10)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Insert the missing elements in given patterns (concrete or pictorial) and explain reasoning **MEASUREMENT** **Length** • Explore activities associated with conservation of length • Solve practical problems involving length **Weight/Mass** • Solve practical problems involving mass/weight **Time** • Solve practical problems involving time (including the interpretation of calendars) **Capacity** • Explore activities associated with conservation of capacity • Solve practical problems involving capacity **STATISTICS** **Tally Charts and Pictographs** • Collect and classify data to make decisions based on a real-life situation or problem • Construct tally charts and pictographs using appropriate symbolic representations • Interpret data from tally charts and pictographs based on a real-life problem or situation • Make informed decisions based on data analysed • Justify decisions made using data collected in writing and/or oral presentations	**GEOMETRY** **Solids and Plane Shapes** https://learn.moe.gov.tt/mod/resource/view.php?id=7090 **Geometrical Patterns** https://www.moe.gov.tt/core-skills-4/ (integration) https://www.youtube.com/watch?v=dx64YZbktuo https://www.youtube.com/watch?v=uCV6P5vcvgs (parts can be used) https://www.youtube.com/watch?v=a4f8NrJOCw8 **MEASUREMENT** **Time** https://www.moe.gov.tt/my-country-the-past/ (integration) https://www.youtube.com/watch?v=dY2tUgX0UkU (calendar - parts can be used) **STATISTICS** **Tally Charts and Pictographs** https://learn.moe.gov.tt/mod/url/view.php?id=6527 https://uk.ixl.com/math/year-2/interpret-pictograms (interpret pictographs) https://uk.ixl.com/math/year-2 (pictographs) http://eduplace.com/kids/hmm/practice/1/ep1_01.html (pictographs) http://eduplace.com/kids/hmm/practice/templates/rules.jsp?ID=hmm07_ep/gr2/0402&GRADE=2&UNIT=1&CHAPTER=4&LESSON=2&UNIT_TITLE=Number%20Concepts,%20Addition,

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		%20Subtraction,%20and%20Graphing&CHAPTER_TITLE=Data,%20Graphing,%20and%20Probability (pictographs) https://educators.brainpop.com/bp-jr-topic/pictographs/ (pictographs) (teacher resource) https://learn.moe.gov.tt/mod/resource/view.php?id=5875 (integration - idea from Agricultural Science can be used to create pictographs) (teacher resource) https://learn.moe.gov.tt/mod/resource/view.php?id=5754 (integration - Spanish names can be reinforced in appropriate pictograph) (teacher resource) https://www.moe.gov.tt/entrepreneurship-work-leisure-revised/ (integration-creating a pictograph) (teacher resource)

CLASS: Standard TWO

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Number Concepts** • Skip count in ascending and descending order within a specified amount • Read and write number names and numerals to 1 000 **Place Value and Rounding** • Count a specified number of objects and use them to form groups of 100s, 10s and 1s **Number Patterns** • Describe and extend simple number patterns that increase or decrease **Number Relationships** • Count objects in sets to demonstrate equality and inequality of sets **Addition and Subtraction** • Perform addition (up to 3 addends) and subtraction (up to 999) using the algorithm **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving addition and subtraction **Fractions** • Identify wholes and parts of wholes • Differentiate between equal and unequal parts of the whole **GEOMETRY**	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/url/view.php?id=6568 https://learn.moe.gov.tt/mod/resource/view.php?id=7337 https://www.youtube.com/watch?v=W8CEOlAOGas (skip counting in 10s) https://www.youtube.com/watch?v=CJmCQs877dQ (skip counting in 100s) htttps://www.youtube.com/watch?v=7stosHbZZZg (skip counting in 10s – ascending and descending order) https://www.youtube.com/watch?v=uvaQSekJKzA (skip counting in 10s – ascending and descending order) **Place Value and Rounding** https://www.youtube.com/watch?v=foQBIm_0iAM (counting to form groups of 10) https://www.youtube.com/watch?v=E-M14YgL0W4 (making groups of 10 and 100) **Number Patterns** https://learn.moe.gov.tt/mod/url/view.php?id=6597 https://learn.moe.gov.tt/mod/resource/view.php?id=7896 https://www.youtube.com/watch?v=WNuDSMlc2LA (number patterns – missing numbers) https://www.youtube.com/watch?v=Cal9DzpcVlA (hundred charts patterns) https://www.k5learning.com/free-math-worksheets/first-grade-1/number-patterns/extending

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Solids and Plane Shapes • Classify, describe, compare and name solids and give reasons for classification (cube, cuboid, cylinder, pyramid, cone, sphere and triangular-based prism – with a focus on the triangular-based prism) • Identify the plane shapes or faces of the triangular-based prism and create triangular-based prisms and other solids using plane shapes **MEASUREMENT** **Linear** • Use non-standard units for measuring length **Mass/Weight** • Use non-standard units for measuring mass/weight **Capacity** • Use non-standard units for measuring capacity **Area** • Touch, colour and cover surfaces to develop the concept of area • Compare and order the area of surfaces using direct comparison **STATISTICS** **Tally Charts** • Identify features of tally charts (e.g. using one stroke/tally mark, grouping of strokes/tally marks in fives)	**Number Relationships** https://www.youtube.com/watch?v=lPN99I3K6Ks (equal and unequal) **Addition and Subtraction** https://www.youtube.com/watch?v=zyVliUqkths (addition and subtraction using base-ten blocks) https://www.youtube.com/watch?v=djoBRjsd8dE (addition with regrouping up to 999) https://www.k5learning.com/free-math-worksheets/third-grade-3/addition/add-3-digit-numbers-in-columns-no-regrouping (adding 3-digit numbers) https://www.k5learning.com/free-math-worksheets/third-grade-3/subtraction/subtract-3-digit-numbers-with-regrouping (subtraction of 3-digit numbers with regrouping) **Mental Mathematics** https://www.youtube.com/watch?v=NouYwlL9hLU (compatible numbers) https://www.youtube.com/watch?v=aK3FKEZJKec (addition and subtraction facts) https://www.youtube.com/watch?v=blPL3OWkV4g (compensation) **Fractions** https://www.youtube.com/watch?v=OVC7kij8m2M (equal and unequal parts) https://www.youtube.com/watch?v=acW6hSTnEOw (equal and unequal parts)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		GEOMETRY **Solids and Plane Shapes** https://learn.moe.gov.tt/mod/resource/view.php?id=7091 **MEASUREMENT** **Linear** https://www.youtube.com/watch?v=HDfvHe7n8nY (measuring length using body parts) https://www.youtube.com/watch?v=1fag0bfQVaQ (measuring length using cubes using different non-standard units) **Mass/Weight** https://www.youtube.com/watch?v=PO8ItHHKzbw (mass/weight – non-standard units) https://www.k5learning.com/free-math-worksheets/second-grade-2/measurement/weights-non-standard-units (worksheets) **Capacity** https://www.youtube.com/watch?v=r9emftGfpjQ (non-standard units for measuring capacity) https://www.youtube.com/watch?v=_X8rkdvSMRw (measuring capacity using cups) **Area** https://www.youtube.com/watch?v=UXHy9GlmgrA (introduction to area) **STATISTICS** **Tally Chart** https://www.youtube.com/watch?v=gbScJ5LVqbo (representing numbers using tally marks)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		https://www.youtube.com/watch?v=-pEA3w8SQws (counting with tally marks and tally charts) https://www.k5learning.com/free-math-worksheets/second-grade-2/data-graphing/tally-sheet
Term II	**NUMBER** **Number Concepts** • Match the number names and numerals to the quantities they represent up to 1 000 (concrete and pictorial representations of base ten materials) • Use money notation to record amounts of money, dollars only and cents only (e.g. $7, 25c), used in money transactions **Place Value and Rounding** • Round numbers to the nearest ten **Number Patterns** • Recognize when an error occurs in a pattern and explain what is wrong **Number Relationships** • Use the equal sign to record equivalent number relationships e.g. 6+4=7+3 • Use the unequal sign to record number relationships that are not equivalent e.g. 3+2≠1+6 **Addition and Subtraction** • Solve one-step and two-step real-life addition and subtraction problems **Multiplication**	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/resource/view.php?id=7337 https://www.youtube.com/watch?v=9NHf5FD_4rA (using base-ten blocks to represent numbers) **Place Value and Rounding** https://www.khanacademy.org/math/arithmetic-home/arith-place-value/arith-rounding/v/rounding-to-the-nearest-10 https://www.k5learning.com/free-math-worksheets/second-grade-2/place-value-rounding/round-2-digit-numbers-nearest-10 **Number Pattern** https://www.k5learning.com/free-math-worksheets/first-grade-1/number-patterns/identify-patterns (has to be adapted to address error recognition) **Number Relationships** https://www.youtube.com/watch?v=W_2PE_i3upI (equal and not equal to) **Addition and Subtraction** https://learn.moe.gov.tt/mod/resource/view.php?id=8189 https://www.k5learning.com/free-math-worksheets/third-grade-3/word-problems-mixed (use only those items that satisfy the "up to 999" criterion)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve one-step real-life problems involving repeated addition **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving addition, subtraction and multiplication **Fractions** • Name and record fractions using words and symbols **GEOMETRY** **Solids and Plane Shapes** • Explore the properties of solids in terms of faces, edges and vertices and compare and classify solids according to their properties related to faces, edges and vertices (cube, cuboid, cylinder, pyramid, cone and triangular-based prism) • Name plane shapes and solids used to create compound shapes (pictorial representation) and name solids and plane shapes from verbal or written descriptions **MEASUREMENT** **Linear** • Demonstrate the appropriate use of the measuring instrument for length (ruler) • Measure lengths and distances using standard units (metre and centimetre) and record as metres only and centimetres only **Area**	**Multiplication and Division** https://learn.moe.gov.tt/mod/resource/view.php?id=8563 https://www.k5learning.com/free-math-worksheets/third-grade-3/word-problems-mixed (use problems with multipliers and divisors up to 5, division without remainder) **Mental Mathematics** https://www.youtube.com/watch?v=Ram-TykPgl8 (some of the multiplication strategies can be adapted for mental mathematics) **Fractions** https://learn.moe.gov.tt/mod/resource/view.php?id=7046 https://www.youtube.com/watch?v=-QEFO8zWoz8 (naming fractions) https://www.k5learning.com/free-math-worksheets/first-grade-1/fractions (writing fractions worksheets) **GEOMETRY** **Solids and Plane Shapes** https://www.youtube.com/watch?v=X_DJgdx00yQ (properties of solids and common solids) https://www.youtube.com/watch?v=CYVmmTaqIPU (faces, edges and vertices) https://www.youtube.com/watch?v=3-QwWFkz5hw (describing 3d shapes) https://www.k5learning.com/free-math-worksheets/second-grade-2/geometry/faces-edges-vertices (properties of solids worksheets) **MEASUREMENT**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Measure, record, compare and order area of surfaces using non-standard units • Calculate the area of shapes by counting squares **Time** • Tell and record time on digital and analog clocks to the hour, half past the hour, quarter past and quarter to the hour **STATISTICS** **Block Graphs** • Identify features of tally charts and block graphs (e.g. baseline/start line, labels (of sets) on axis, equal spacing, title, scale factors)	**Linear** https://www.youtube.com/watch?v=tuBLuIW1U70 (measuring length in centimetres and metres) https://www.k5learning.com/free-math-worksheets/first-grade-1/measurement/lengths-centimeters (worksheets) **Area** https://www.youtube.com/watch?v=J3wnKaoFffQ (measuring area using non-standard units) https://www.youtube.com/watch?v=vTI50LwzPGM (measuring area using non-standard units) https://www.youtube.com/watch?v=00kqSqnA_18 (area using square tiles) https://www.mathlearningcenter.org/sites/default/files/pdfs/SecB3SUP-D2_MeasureArea-201304.pdf (teacher resource) **Time** https://www.matific.com/sg/en-gb/home/maths-activities/2nd-grade/measurements/time/analog-and-digital-clocks/ (worksheets) **STATISTICS** **Block Graphs** https://www.youtube.com/watch?v=yboVsnf8IsQ https://www.youtube.com/watch?v=4sMtOfNa5H8 https://www.youtube.com/watch?v=zkICuXiWgic
Term III	**NUMBER** **Number Concepts** • Sequence number names and numerals to 1 000	**NUMBER** **Number Concepts** https://www.youtube.com/watch?v=iOkM9Ox7QSE (comparing and ordering numbers)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Place Value and Rounding • Round numbers to the nearest hundred **Division** • Solve one-step real-life problems involving sharing and grouping **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving the four operations **GEOMETRY** **Geometrical Patterns** • Describe a given pattern (repeating, increasing or decreasing), determine the pattern rule and extend the pattern using concrete materials or pictorial representation **MEASUREMENT** **Mass/Weight** • Demonstrate the appropriate use of the measuring instrument (such as bathroom scale, equal arm balance) • Measure the mass/weight of objects using the standard unit (kilograms and multiple units of kg) **Capacity** • Use the standard units (litres) for measuring the capacity of containers **STATISTICS** **Tally Charts and Block Graphs**	https://www.math-salamanders.com/ordering-numbers-worksheets.html#Ordering1000 (can be adapted by teacher) **Place Value and Rounding** https://learn.moe.gov.tt/mod/url/view.php?id=6570 https://learn.moe.gov.tt/mod/url/view.php?id=6572 https://www.k5learning.com/free-math-worksheets/third-grade-3/place-value-and-rounding/round-3-digit-numbers-nearest-100 (worksheets) **Multiplication and Division** https://learn.moe.gov.tt/mod/resource/view.php?id=8563 **GEOMETRY** **Geometrical Patterns** https://www.youtube.com/watch?v=blhE8QurgGg https://www.youtube.com/watch?v=a5KC-k9wi8I **MEASUREMENT** **Mass/Weight** https://www.youtube.com/watch?v=OejTtpvWns4 (using an equal arm balance) https://www.youtube.com/watch?v=ptaVY3-vRZM (using a scale – kilograms) **Capacity** https://www.youtube.com/watch?v=eRxY6a2apHw **STATISTICS** **Tally Charts and Block Graphs**

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Interpret data from tally charts and block graphs based on a real-life problem or situation • Justify decisions made using data collected in writing and/or oral presentations	https://www.liveworksheets.com/jc1912588ztfu1838198hg (tally chart)

CLASS: Standard THREE

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Number Concepts** • Count forward (count on) and backward (count back) by ones within 10 000 from any given number • Read and write number names and numerals to 10 000 **Place Value and Rounding** • Show, using various manipulatives (e.g. base ten materials, place value mats) that a given numeral consists of a certain number of thousands, 'hundreds' 'tens' and 'ones' and record as such, e.g. 1 245 = 1 thousand, 2 hundreds, 4 tens and 5 ones • Round numbers to the nearest tens and hundreds **Number Patterns** • Describe and extend whole number patterns involving the four operations e.g. 1, 6, 11, 16… and patterns involving fractions, by using the pattern rule **Number Relationships** • Calculate the unknown in number sentences involving addition and subtraction of whole numbers and involving one unknown **Whole Number (Operations): Addition and Subtraction**	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/resource/view.php?id=7445 https://learn.moe.gov.tt/mod/url/view.php?id=6655 **Place Value and Rounding** https://learn.moe.gov.tt/mod/url/view.php?id=6651 https://learn.moe.gov.tt/mod/resource/view.php?id=7561 https://learn.moe.gov.tt/mod/url/view.php?id=11163 https://www.mathsisfun.com/place-value.html **Number Patterns** https://learn.moe.gov.tt/mod/resource/view.php?id=7952 https://www.youtube.com/watch?v=ZQ7DuyUfauY (patterns and terms) https://www.splashlearn.com/math-skills/fourth-grade/algebra/number-patterns (interactive extending number pattern activity [rule mentioned]) **Number Relationships** https://www.youtube.com/watch?v=rFwOLmRXcxE (missing number in subtraction sentence) https://www.youtube.com/watch?v=tM5RdNOgkNw (missing number in addition sentence) https://www.youtube.com/watch?v=ycpO6RSCu_M (missing number in addition and subtraction sentences)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve problems involving addition (up to 4 digit numbers with sum less than 10 000) and up to 4 addends and subtraction (with minuend up to 4 digits) **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving addition and subtraction **Fractions** • Represent fractions using area, linear and set models • Name and record fractions using words and symbols **GEOMETRY** **Solids** • Compare and classify solids according to their properties (cube, cuboid, cylinder, pyramid, cone and triangular-based prism) and give reasons for classification • Differentiate between regular and irregular solids • Construct frames of solids and draw/sketch solids to explore the properties of solids in terms of faces, edges and vertices **MEASUREMENT** **Linear** • Explain the suitability of the unit as it relates to the length to be measured • Convert units and sub-units of measures of length	https://www.k5learning.com/free-math-worksheets/third-grade-3/subtraction/subtract-1-digit-from-2-digit-missing-number (subtracting with missing numbers) **Whole Number (Operations): Addition and Subtraction** https://learn.moe.gov.tt/mod/resource/view.php?id=8190 https://www.k5learning.com/free-math-worksheets/fourth-grade-4/addition (worksheets – use only items that satisfy the curriculum stipulations for Standard Three) https://www.k5learning.com/free-math-worksheets/fourth-grade-4/subtraction (worksheets – use only items that satisfy the curriculum stipulations for Standard Three) **Mental Mathematics** https://www.youtube.com/watch?v=NouYwlL9hLU (compatible numbers) https://www.youtube.com/watch?v=aK3FKEZJKec (addition and subtraction facts) https://www.youtube.com/watch?v=blPL3OWkV4g (compensation) **Fractions** https://learn.moe.gov.tt/mod/resource/view.php?id=7092 https://www.youtube.com/watch?v=LH-qQwsh1Ms (area model) https://www.youtube.com/watch?v=0NwGkPWofxc (set model) https://www.youtube.com/watch?v=fE4O5ExRPtY (set model) https://www.youtube.com/watch?v=d30xOClj6RA (linear model) https://www.youtube.com/watch?v=SJ46hL_WRzQ (linear model)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Mass/Weight • Identify grams as a standard unit for measuring mass/weight and measure mass/weight of objects in grams using a set of scales **Time** • Read and tell time in five-minute intervals on analog and digital clocks **Capacity** • Explain the need for and the importance of a smaller standard unit of measure for capacity • Measure the capacity of containers using the litre and the millilitre **Area** • Explain the need for and the importance of a standard unit of measure for area • Select and use the most appropriate standard unit for measuring area (square centimetre – cm^2, square metre - m^2) for small and large surfaces **STATISTICS** **Tally Charts** • Collect data (using observation and frequency counts) and classify data through investigation of a problem/question based on a real-life situation • Construct tally charts using appropriate symbolic representations • Identify features of tally charts	**GEOMETRY** **Solids** https://learn.moe.gov.tt/mod/resource/view.php?id=7093 https://www.math-salamanders.com/3d-shapes-worksheets.html https://www.youtube.com/watch?v=8Z60a8u2u2w (classifying solids) https://www.youtube.com/watch?v=_XJ1A5io8vc (drawing solids) https://www.youtube.com/watch?v=JyT29G-KbMQ (drawing solids) **MEASUREMENT** **Linear** https://learn.moe.gov.tt/mod/resource/view.php?id=10827 **Mass/Weight** https://learn.moe.gov.tt/mod/resource/view.php?id=12101 **Time** https://learn.moe.gov.tt/mod/url/view.php?id=6691 https://learn.moe.gov.tt/mod/url/view.php?id=6692 https://www.youtube.com/watch?v=W47g3FMFKJU (five minute intervals) https://www.k5learning.com/free-math-worksheets/second-grade-2/telling-time/telling-time-5-minute-intervals **Capacity** https://www.youtube.com/watch?v=oXp5eXQTYR8 (millilitres and litres)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		STATISTICS **Tally Charts** https://learn.moe.gov.tt/mod/url/view.php?id=6694 http://mathster.com/worksheets/KS1%20&%20KS2%20Free%20Maths%20Worksheets/Tally%20charts%20and%20frequency%20tables.pdf
Term II	**NUMBER** **Number Concepts** • Match the number names and numerals to the quantities they represent up to 10 000 **Place Value and Rounding** • Round numbers to the nearest thousands **Number Patterns** • Recognize when an error occurs in a pattern and what is wrong **Number Relationships** • Calculate the unknown in number sentences involving multiplication of whole numbers and involving one unknown **Multiplication** • Use the algorithm for multiplication of whole numbers • Solve real-life problems involving multiplication (up to 2 digit by 2 digit numbers) **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving addition, subtraction and multiplication	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/resource/view.php?id=7445 **Place Value and Rounding** https://learn.moe.gov.tt/mod/url/view.php?id=11167 https://learn.moe.gov.tt/mod/resource/view.php?id=7561 https://www.liveworksheets.com/worksheets/en/Math/Rounding_numbers/Rounding_off_to_nearest_10,_100,_1000_vg1179165yp (worksheet) **Number Patterns** https://www.mathworksheets4kids.com/patterns.php (has to be adapted to address error recognition) **Number Relationships** https://www.youtube.com/watch?v=0FhRXcAuFZI (unknown in multiplication number sentences) https://www.mathworksheets4kids.com/multiplication-number-line.php (number line - fill in the missing numbers) **Multiplication** https://learn.moe.gov.tt/mod/resource/view.php?id=8566 https://www.k5learning.com/free-math-worksheets/fourth-grade-4/multiply-in-columns/multiply-columns-2-digit-2-digit

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Fractions • Recognize and generate equivalent fractions using a variety of models • Record equivalent relationships using the equal symbol (and non-equivalent relationships using the not equal to symbol) • Compare and order proper fractions with unlike denominators using equivalent forms **GEOMETRY** **Plane Shapes** • Compare and classify plane shapes according to their properties • Differentiate between regular and irregular polygons (triangles, quadrilaterals, pentagons, hexagons, octagons) **MEASUREMENT** **Linear** • Differentiate between area and perimeter • Count and record the number of units used to measure the perimeter of a shape • Measure and calculate the perimeter of regular shapes and compare and order **Mass/Weight** • State the relationship between the kilogram and gram and select and use the most appropriate standard unit for measuring mass/weight **Time** • Compare the duration of various events **STATISTICS**	https://www.mathworksheets4kids.com/multiplication-word-problems.php (use only items up to 2 digit by 2 digit) **Fractions** https://learn.moe.gov.tt/mod/resource/view.php?id=7092 https://www.youtube.com/watch?v=W72eW83rrC8 (equivalent fractions) https://www.youtube.com/watch?v=1sy4pESEFVk (equivalent fractions visually) https://www.youtube.com/watch?v=bj5fSn96Cns (comparing and ordering fractions) https://www.math-salamanders.com/equivalent-fractions-worksheet.html https://www.liveworksheets.com/worksheets/en/Math/Fractions (worksheets) **GEOMETRY** **Plane Shapes** https://www.youtube.com/watch?v=UN57vvrMrY4 (regular and irregular polygons) https://www.commoncoresheets.com/SpecificLink.php?Path=Math/Shapes/Regular%20or%20Irregular (worksheets) **MEASUREMENT** **Linear** https://learn.moe.gov.tt/mod/resource/view.php?id=10827 https://www.youtube.com/watch?v=3y1tSDdjmg8 (difference between area and perimeter) https://www.mathworksheets4kids.com/perimeter.php (worksheets)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	Bar Graphs • Collect data (using observation and frequency counts) and classify data through investigation of a problem/question based on a real-life situation • Construct bar graphs using appropriate symbolic representations • Identify features of bar graphs	**Mass/Weight** https://www.youtube.com/watch?v=HZJlHZhwC9U (relationship between kilograms and gram – teacher to use the relevant section of the video) **Time** https://www.math-aids.com/Time/ (elapsed time worksheets can be adapted) **STATISTICS** **Bar Graphs** https://learn.moe.gov.tt/mod/url/view.php?id=6696 https://www.youtube.com/watch?v=oQ7NEGBeIfM (bar graphs explained) https://www.youtube.com/watch?v=p4oOtkLvdGE (creating a bar graph) https://www.mathworksheets4kids.com/bar-graph.php (worksheets)
Term III	**NUMBER** **Number Concepts** • Sequence number names and numerals to 10 000 **Number Relationships** • Calculate the unknown in number sentences involving division of whole numbers and involving one unknown **Division** • Use the algorithm for division of whole numbers	**NUMBER** **Number Concepts** https://learn.moe.gov.tt/mod/url/view.php?id=11161 https://www.math-salamanders.com/ordering-4-digit-numbers.html (worksheets) **Number Relationships** https://www.youtube.com/watch?v=xLNfyma_ElA (calculating the unknown) https://www.math-aids.com/Division/Division_Worksheets_MNH.html (worksheets)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve real-life problems involving division (up to 4 digit divided by 1 digit) **Mental Mathematics** • Investigate and use a variety of mental math strategies and recording strategies to solve problems involving the four operations **Fractions** • Distinguish between proper, improper and mixed number and convert from one form to another **GEOMETRY** **Symmetry** • Determine the number of lines of symmetry in plane shapes – regular, irregular and curved, and in numerals and letters • Create symmetrical shapes **Measurement** **Linear** • Measure and calculate the perimeter of irregular shapes and compare and order **Mass/Weight** • Measure and compare the mass/weights of objects in kilograms and grams **Time** • Read times from a 24 hour clock and match to the analog and digital times **Capacity** • State the relationship between the litre and millilitre and convert from one to the other **Area**	**Division** https://www.k5learning.com/free-math-worksheets/fifth-grade-5/multiplication-division https://www.youtube.com/watch?v=Kbf6earFI7w (framing division word problems) **Fractions** https://www.youtube.com/watch?v=GrOiC9fKlis https://www.youtube.com/watch?v=_2yRsab7NXk https://www.youtube.com/watch?v=qHnaF2PoaKE (introduction to improper fractions) https://www.youtube.com/watch?v=W97zsq3GFFY (introduction to mixed numbers) https://www.youtube.com/watch?v=igfWyYanyuQ (improper fraction to mixed number) https://www.youtube.com/watch?v=ROgAREWUFpc (mixed number to improper fraction) https://www.k5learning.com/free-math-worksheets/fourth-grade-4/fractions/improper-fractions-to-mixed-numbers https://www.k5learning.com/free-math-worksheets/fifth-grade-5/converting-fractions/mixed-numbers-to-improper-fractions **GEOMETRY** **Symmetry** https://www.youtube.com/watch?v=MtqtIiJsfiE (introduction to symmetry part 1) https://www.youtube.com/watch?v=Ae6kn4BqqrA (introduction to symmetry part 2) https://www.youtube.com/watch?v=MW0kDNHS6lo (symmetrical and non-symmetrical shapes)

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Measure area using standard units (cm2, m2) and record measure **STATISTICS** • Tally Charts and Bar Graphs • Interpret data from tally charts and bar graphs based on a real-life problem or situation • Justify decisions made using data collected in writing and/or oral presentations	https://www.mathworksheets4kids.com/symmetry.php https://www.k5learning.com/free-math-worksheets/fourth-grade-4/geometry/symmetry **MEASUREMENT** **Linear** https://www.youtube.com/watch?v=f4VlNwklLT8 (calculating perimeter of irregular shapes) https://www.youtube.com/watch?v=zLACCluwR7Q (calculating perimeter of irregular shapes) https://easyteaching.net/maths-resources/measurement-worksheets/area-and-perimeter/ https://www.mathworksheets4kids.com/perimeter.php (comparing perimeter) **Mass/Weight** https://www.youtube.com/watch?v=jPnUA1Z8FTg (measuring in kilograms) https://www.youtube.com/watch?v=GX8kvgIatAc (measuring in grams) https://www.softschools.com/measurement/worksheets/weight_worksheets/grams_and_kilograms_worksheets/ **Time** https://www.youtube.com/watch?v=EapsfSfqeWA (24 hour clock) https://www.mathworksheets4kids.com/12-hours-24-hours-conversion.php

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		Capacity https://www.youtube.com/watch?v=yCFdjVRvLPA (litres and millilitres) **Area** https://www.youtube.com/watch?v=CKdNPXVexqI (square centimetres) https://easyteaching.net/maths-resources/measurement-worksheets/area-and-perimeter/ **STATISTICS** **Tally Charts and Bar Graphs** https://www.liveworksheets.com/worksheets/en/Math/Bar_graphs (bar graph worksheets) https://www.mathgames.com/skill/3.10-interpret-bar-graphs https://www.primaryresources.co.uk/maths/mathsF1c.htm (interpreting tally charts and bar graphs)

CLASS: Standard FOUR

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**NUMBER** **Number Concepts, Place Value and Rounding** ● Recognize, represent, model, compare, and order numbers up to 1 000 000 with reference to place value. ● State the value of each digit in a numeral. ● Demonstrate an understanding of different types of numbers. ● Develop an understanding of rounding to thousands. **Number Patterns** ● Recognize and explore repeating, increasing and decreasing number patterns up to 1 000. ● Use a pattern rule to determine missing elements for a given pattern and to extend or predict subsequent elements in patterns. ● Develop an understanding of different types of numbers by exploring their patterns. ● Create repeating, increasing and decreasing number patterns and explain the pattern rule. ● Develop an understanding that pattern recognition can aid in problem- solving. ● Solve problems involving the use of patterns. **Number relationships**	**NUMBER** **Number Concepts, Place Value and Rounding** https://www.khanacademy.org/math/cc-fourth-grade-math/imp-place-value-and-rounding-2 https://www.youtube.com/watch?v=s_y9AHZDLZA https://www.youtube.com/watch?v=VyYwYPNhzVM https://www.mathsisfun.com/rounding-numbers.html https://www.k5learning.com/free-math-worksheets/fifth-grade-5/place-value-rounding https://www.youtube.com/watch?v=fB4_5GJwEHI https://www.youtube.com/watch?v=iK0y39rjBgQ&t=3s https://www.brainingcamp.com/tutorials Assessment https://learn.moe.gov.tt/pluginfile.php/338680/mod_resource/content/2/29%2005%2020%20S4%20T1%20NUMBER%20Number%20Concepts.pdf https://www.thatquiz.org/tq-c/math/place-value/ https://www.liveworksheets.com/worksheets/en/math/Rounding_numbers/Rounding_to_the_nearest_hundred_cl1033751jd **Number Patterns** https://www.youtube.com/watch?v=JcNCfb0c8nc https://www.youtube.com/watch?v=d71o1OEN0u4 https://www.khanacademy.org/math/k-8-grades/cc-fourth-grade-math/imp-factors-multiples-and-patterns Assessment https://www.iknowit.com/lessons/b-number-patterns.html

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Calculate the unknown number sentences involving the four operations and explain the procedures used **Fractions** • Add a fraction to a whole number. • Subtract a fraction from a whole number. • Add and subtract fractions involving the same denominator and one denominator a multiple of the other. • Solve problems involving fractions and using the algorithms developed. **GEOMETRY** **Angles** • Demonstrate an understanding of angles. • Recognize an angle as an amount of turn (whole turn, three quarter turn, half turn, and quarter turn). • Describe the right angle as a quarter turn. • Investigate angles (right angle, angles greater than and smaller than right angles) in regular and irregular polygons and faces of solid. • Draw shapes with angles of various sizes. • Investigate angles (right angle, angles greater than and smaller than right angles) in regular and irregular polygons and faces of solids. • Draw shapes with angles of various sizes. **MEASUREMENT** **Linear** • Demonstrate an understanding of the relationship between standard units and their	https://www.liveworksheets.com/worksheets/en/Math/Number_Patterns/Mathematics_Bi_Weekly_Test_4_hv1317006ix **Number relationships** Solve problems involving number sentences with one unknown: https://www.youtube.com/watch?v=ciQCZto9vWo https://www.youtube.com/watch?v=Mvm0y1Qr_JQ **Fractions** https://www.youtube.com/watch?v=PKY8cbq-qoY https://www.youtube.com/watch?v=BArqkejVKnc https://www.khanacademy.org/math/arithmetic/fraction-arithmetic/arith-review-add-sub-frac-word-probs/e/adding-and-subtracting-fractions-with-like-denominators-word-problems Assessment proper-1.pdf (mathworksheets4kids.com) proper-2.pdf (mathworksheets4kids.com) proper-1.pdf (mathworksheets4kids.com) Adding Fractions With Whole Numbers Worksheets | Worksheet 2 (wmznlejcfq.s3-ap-southeast-1.amazonaws.com) **GEOMETRY** **Angles** https://www.youtube.com/watch?v=X9w3WvP9nQ8 https://www.mathsisfun.com/rightangle.html https://www.youtube.com/watch?v=hfbbttTYOOw Assessment https://www.liveworksheets.com/worksheets/en/Math/Types_of_Angles/Types_of_Angles_mq1511999ta

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	subparts to solve practical problems involving linear measures. • Demonstrate appropriate techniques when measuring. • Identify the millimetre as a unit for measuring length. · • Measure lengths in millimetre. • Measure lengths using combinations of millimetres, centimetres and metres. • Convert linear measures expressed as mm, cm and m. • State the meaning of the prefixes used in measurement. • Draw plane shapes given the perimeter • Apply decimal knowledge to record measurement • Solve problems involving linear measure. **Mass/ Weight** • Demonstrate an understanding of the relationship between standard units and their subparts to solve problems involving mass/weight. • Measure mass/weight in kilograms and grams. • Convert measures of mass/weight involving grams and kilograms. • Solve computational and real-life problems involving grams and kilograms. **Statistics** • Interpret data from tables, charts and graphs	**MEASUREMENT** **Linear** https://www.youtube.com/watch?v=ZFL1IUNWUZQ&t=4s https://www.youtube.com/watch?v=VlQaUo-rkEA https://www.khanacademy.org/math/cc-fifth-grade-math/imp-measurement-and-data-3/imp-unit-conversion/a/metric-units-of-mass-review Assessment https://www.liveworksheets.com/worksheets/en/Math/Units_of_measurement/Length_Conversion_kc182375of https://www.liveworksheets.com/worksheets/en/Math/Units_of_measurement/Metric_Unit_of_Length_tz1216660kf https://www.liveworksheets.com/worksheets/en/Math/Units_of_measurement/Length_Conversion_tn182585ye https://www.liveworksheets.com/worksheets/en/Math/Perimeter/Perimeter_ec77752uu **Mass/ Weight** https://www.youtube.com/watch?v=ZFL1IUNWUZQ&t=4s https://www.youtube.com/watch?v=VlQaUo-rkEA https://www.khanacademy.org/math/cc-fifth-grade-math/imp-measurement-and-data-3/imp-unit-conversion/a/metric-units-of-mass-review https://www.liveworksheets.com/worksheets/en/Math/Mass/Measuring_weight_in_grams_he1853313ko https://www.liveworksheets.com/worksheets/en/Math/Mass/Measurement_hd1920048ll Assessment https://www.iknowit.com/lessons/d-weight-conversions-metric.html

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Apply findings from analysis of data to solve problems. • Communicate findings and decisions made using appropriate vocabulary associated with statistics. • Evaluate decisions made based on analysis of data represented in tables, charts and graphs.	https://www.liveworksheets.com/worksheets/en/Math/Mass/Converting_Metric_Units_of_Mass_fs1656238oh https://www.liveworksheets.com/worksheets/en/Math/Mass/Convert_and_compare_mass_jp240979bx **Statistics** https://www.youtube.com/watch?v=nGDYjEJCHUM https://www.youtube.com/watch?v=OmLl6pkvV-I https://www.twinkl.co.uk/resource/t2-m-1388-new-interpreting-bar-charts-activity-sheets Assessment https://www.iknowit.com/lessons/d-interpreting-bar-graphs.html https://www.liveworksheets.com/jz1866402zx https://www.liveworksheets.com/worksheets/en/Math/Statistics/Frequency-Tally_Tables_od1868968ug
Term II	**NUMBER** **Whole Number (Operations)** • Solve problems using whole numbers involving the four operations. • Demonstrate an understanding of algorithms, mental strategies and estimation strategies. **Fractions** • Develop and apply procedures to solve problems involving fractions and the four operations. **GEOMETRY** **Angles** • Demonstrate an understanding of angles.	**NUMBER** **Whole Number (Operations)** https://www.youtube.com/watch?v=HAhg0uXn9GA https://www.onlinemathlearning.com/grade-4.html#Multiplication https://www.mathplayground.com/grade_4_games.html https://www.youtube.com/watch?v=eIUoIhfupuA https://www.youtube.com/watch?v=tncIVXID8-8 https://www.youtube.com/watch?v=HdU_rf7eMTI https://www.k5learning.com/free-math-worksheets/fourth-grade-4/mental-multiplication https://www.mathsisfun.com/multiplication-tips-tricks.html https://www.mathsisfun.com/associative-commutative-distributive.html

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	MEASUREMENT **Time** Accurately read and record time to the minute and solve practical problems involving time.	https://www.mathmammoth.com/preview/tests/End_of_Year_Test_Grade4.pdf https://www.liveworksheets.com/eb1259425ft https://www.iknowit.com/fourth-grade.html https://www.youtube.com/watch?v=l0JyMFDNyjM https://www.youtube.com/watch?v=eFpRWIyTDqQ **Fractions** https://www.youtube.com/watch?v=PKY8cbq-qoY https://www.youtube.com/watch?v=BArqkejVKnc https://www.youtube.com/watch?v=ov-0T87LHZg https://www.youtube.com/watch?v=aMJZXKRhEzE https://www.youtube.com/watch?v=mJUvxRy-flQ https://www.youtube.com/watch?v=sWObNz8Wp7c https://www.youtube.com/watch?v=OTE4Ia5IinA https://www.youtube.com/watch?v=19OwocV_tGc https://www.mathgoodies.com/lessons/unit16/solve-word-problems https://www.onlinemathlearning.com/fraction-word-problems.html **GEOMETRY** **Angles** https://www.youtube.com/watch?v=O3V2AdwoBBU https://www.youtube.com/watch?v=X9w3WvP9nQ8 https://www.mathsisfun.com/rightangle.html https://www.youtube.com/watch?v=hfbbttTYOOw **MEASUREMENT** **Time** https://www.youtube.com/watch?v=r2K1Py9U87I

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		https://www.youtube.com/watch?v=f1AavpvRLvo https://www.vocabulary.cl/Basic/Telling_Time.htm https://www.internet4classrooms.com/online_practice/common_core/math_mathematics_3rd_third_grade/quiz_word_problems_time_minutes_within_hour_3rd_third_grade_math_mathematics_question_1.htm https://uk.ixl.com/maths/time
Term III	**NUMBER** **Decimals** • Demonstrate an understanding of decimals up to hundredths. • Develop an understanding of the comparison of decimals. • Develop an understanding of rounding to whole numbers and tenths • Develop and apply procedures to solve problems involving the addition and subtraction of decimals. • Use estimation skills to check solutions to problems and determine reasonableness of answers. **Problem Solving** • Solve multistep problems involving whole numbers, fractions and decimals using algorithms, mental strategies and other problem-solving strategies. • Solve problems involving direct proportion. **GEOMETRY** **Triangles**	**NUMBER** **Decimals** https://www.youtube.com/watch?v=SRoepFHelKg https://www.khanacademy.org/math/cc-fourth-grade-math/imp-decimals https://www.youtube.com/watch?v=5HA792ltlYM https://www.youtube.com/watch?v=FZhWVy8INyk https://www.k5learning.com/free-math-worksheets/fourth-grade-4/decimals https://www.mathsisfun.com/adding-decimals.html https://www.k5learning.com/free-math-worksheets/fifth-grade-5/decimals-addition-subtraction https://www.youtube.com/watch?v=CvdmFpehPZc **Problem Solving** https://www.mathsisfun.com/puzzles/number-puzzles-index.html https://uk.ixl.com/maths/year-4/addition-and-subtraction-word-problems https://uk.ixl.com/maths/year-4/multiplication-and-division-word-problems https://uk.ixl.com/maths/year-4/unit-fractions-modelling-word-problems

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Demonstrate an understanding of the different types of triangles based on properties of sides and angles. **MEASUREMENT** **Volume** • Demonstrate an understanding of the concept of volume. • Understand that volume can be quantified. • Understand conservation of volume. **Area** • Demonstrate an understanding of area of regular and irregular plane shapes. **STATISTICS** • Design survey(s) to solve problem(s) that involves the use of statistical data. • Gather, classify, organize and display data using tables, tally charts and graphs (pictographs, block graphs and bar graphs) and interpret results. • Describe methods and analyse results and make decisions. • Communicate findings and decisions made using vocabulary associated with statistics. • Demonstrate an understanding of mode.	https://www.youtube.com/watch?v=oNbHgzXcV6U https://www.oercommons.org/courseware/lesson/935/overview https://www.mathgoodies.com/lessons/decimals/solve_word_problems **GEOMETRY** **Triangles** https://www.youtube.com/watch?v=1k0G-Y41jRA https://www.youtube.com/watch?v=r4rySgvfDQU **MEASUREMENT** **Volume** https://www.youtube.com/watch?v=ol3mdvIA-7E https://uk.ixl.com/maths/year-4/volume https://www.youtube.com/watch?v=YECQ5JGNKIc https://www.youtube.com/watch?v=_3hhoENnRjw https://www.youtube.com/watch?v=OssziXxgI14 **Area** https://www.youtube.com/watch?v=S8ueaJ_bAUc https://www.youtube.com/watch?v=p8gblx7QY24 https://www.youtube.com/watch?v=x0NHC0cmKfU https://www.youtube.com/watch?v=p8gblx7QY24 https://www.education.com/worksheet/article/an-introduction-to-area/ https://www.commoncoresheets.com/downloadWorksheet.php?path=Math/Area/Blocks/English&pageNumber=1 **STATISTICS** https://www.youtube.com/watch?v=6L2ch1esFGA https://www.youtube.com/watch?v=5sZvuIjCkjg

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		https://www.youtube.com/watch?v=o5Jn2ltB314 https://www.biglearners.com/?blKey=showWSPDFOnPage&wsCatCode=833501adba373f76679d00e1caac6e17 https://www.liveworksheets.com/rx1862132hq https://uk.ixl.com/maths/year-6/find-the-mode

CLASS: Standard FIVE

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
Term I	**WHOLE NUMBERS** • Solve problems using whole numbers involving the four operations. • Demonstrate an understanding of algorithms, mental strategies, and estimation strategies. • Use estimation strategies (frontend rounding, compensation and compatible numbers) to check and justify answers in problem solving contexts and to determine the strategies. **Fractions** • Develop and apply procedures to add and subtract fractions and mixed numbers to solve problems. • Develop and apply procedures to multiply a fraction by a whole number and multiply fractions and mixed numbers and to solve problems. • Develop and apply procedures to divide whole numbers by fractions, fractions by whole numbers, and fractions to solve problems. • Solve problems involving addition and subtraction of fractions including mixed numbers. • Solve problems involving the multiplication of a fraction by a whole number, fraction by fraction and mixed numbers	**WHOLE NUMBERS** https://www.youtube.com/watch?v=HAhg0uXn9GA https://www.onlinemathlearning.com/grade-4.html#Multiplication https://www.mathplayground.com/grade_4_games.html https://www.youtube.com/watch?v=eIUoIhfupuA https://www.youtube.com/watch?v=tncIVXID8-8 https://www.youtube.com/watch?v=HdU_rf7eMTI https://www.k5learning.com/free-math-worksheets/fourth-grade-4/mental-multiplication https://www.mathsisfun.com/multiplication-tips-tricks.html https://www.mathsisfun.com/associative-commutative-distributive.html https://www.youtube.com/watch?v=l0JyMFDNyjM Assessment https://www.iknowit.com/lessons/e-tables-four-operations-whole-numbers.html https://www.iknowit.com/lessons/e-tables-four-operations-whole-numbers.html **Fractions** https://www.youtube.com/watch?v=kMPhdAXlM8k https://www.youtube.com/watch?v=KofyGPXoCzQ https://www.youtube.com/watch?v=ZRHvs5S_Z0A https://www.youtube.com/watch?v=-5RSmRGduFo https://www.youtube.com/watch?v=KE2NsR6l7xY **Decimals** https://www.youtube.com/watch?v=tsOibhsgYoQ https://www.youtube.com/watch?v=44RVduSjrzY

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Develop and apply algorithms to divide a whole number by a fraction, a fraction by a whole number and a fraction by a fraction. • Solve problems involving the division of : a fraction by a whole number, and a fraction by a fraction **Decimals** ● Develop and apply the procedures to multiply decimals by whole numbers and to divide a decimal by a whole number (up to hundredths) to solve problems. ● Solve problems involving multiplication and division of decimals and whole numbers **Per Cent** • Demonstrate an understanding of percent concretely, pictorially, and symbolically. • Develop an understanding of percent, concretely, pictorially and symbolically. • Calculate the percent of a quantity. • Express a quantity as a percentage of another. • Relate per cents to fractions (halves, quarters, fifths tenths) and decimals. • Compare and order fractions, per cents and decimals. • Solve problems involving fractions, decimals and per cents. **Problem Solving** • Create and solve one-step and multi-step problems involving whole numbers, fractions, mixed numbers, decimals, per cents including	https://www.youtube.com/watch?v=Sah_q6YkF5o **Per Cent** https://www.youtube.com/watch?v=Lvr2YsxG10o https://www.mathsisfun.com/percentage.html https://www.youtube.com/watch?v=FaDtge_vkbg https://www.youtube.com/watch?v=lCNZE8E48TA https://www.youtube.com/watch?v=-Xt4UDk7Kzw https://www.youtube.com/watch?v=DhcM-oe1ZyQ https://www.youtube.com/watch?v=PZDg0_djUtE https://www.youtube.com/watch?v=rR95Cbcjzus Assessment https://www.liveworksheets.com/hs2067356as https://www.liveworksheets.com/tq842882an https://www.iknowit.com/lessons/e-percent-as-a-fraction-out-of-100.html **Problem Solving** https://www.youtube.com/watch?v=wtrA3hpzY_A https://www.youtube.com/watch?v=5-52CG2Bkws https://www.youtube.com/watch?v=vXSbgGjjVnk https://www.youtube.com/watch?v=LQljuPsy_RE&list=PLndjMwSH7MSXqoRs4aFEtDcJlhlj3UXtN https://www.youtube.com/watch?v=GFysDV7wLFQ **GEOMETRY** **Solids and Plane Shapes** https://www.youtube.com/watch?v=zI3rUMrRLF8 https://www.youtube.com/watch?v=3nLpD6bE4fE&t=186s https://www.youtube.com/watch?v=lSOQbzhMMrU https://www.youtube.com/watch?v=3-CxG85wwEs https://www.youtube.com/watch?v=e5TNRU_t-fM

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	money using algorithms, mental strategies, and other problem- solving strategies. • Create and solve real-life, one-step and multi-step problems involving whole numbers, fractions, mixed numbers, decimals, per cents and money (including profit and loss, discount). • Solve problems involving unequal sharing. **GEOMETRY** **Solids and Plane Shapes** • Describe solids in terms of their properties. • Classify and determine the properties of quadrilaterals. • Explore and describe cross-sections of solids, base and height. • Solve problems involving solids and plane shapes. • Classify and compare quadrilaterals according to their attributes (angles, sides, perpendicular and parallel). • Solve problems involving solids and plane shapes. **MEASUREMENT** **Linear: Perimeter** • Develop and use proficiently the formulae to calculate the perimeter of squares and rectangles in problem- solving. **Mass/Weight** • Solve problems involving mass/weight. **Time**	https://www.youtube.com/watch?v=hlD_j3AtxGs https://www.youtube.com/watch?v=0OW2bU0So-4 https://www.youtube.com/watch?v=5CeBlu260Rw Assessment https://uk.ixl.com/maths/year-6/identify-three-dimensional-figures https://uk.ixl.com/maths/year-6/count-vertices-edges-and-faces **MEASUREMENT** **Linear: Perimeter** https://www.youtube.com/watch?v=g4rkjj_PNWg https://www.mathsisfun.com/definitions/perimeter.html Assessment https://www.iknowit.com/lessons/d-perimeter.html **Mass/Weight** https://www.youtube.com/watch?v=4HnyNMhkBs0 https://www.youtube.com/watch?v=xK6j5BnVIdo https://www.youtube.com/watch?v=G0UoVYbsl50 https://www.youtube.com/watch?v=vbX83p0xJ9c **Time** https://www.youtube.com/watch?v=UhMM68fq9FA https://www.youtube.com/watch?v=7PkpCDrDVHs Assessment https://www.thatquiz.org/tq-g/math/time/

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
	• Solve problems involving time.	
Term II	**MEASUREMENT** **Linear: Perimeter** • Develop and use proficiently the formulae to calculate the perimeter of squares and rectangles in problem- solving. **Mass/Weight** • Solve problems involving mass/weight. **Time** • Solve problems involving time. **Volume** • Solve problems in volume **Area** • Solve problems in real-life contexts involving area. • Solve problems involving perimeter and area. **STATISTICS** • Design survey(s) to solve problem(s) that involves the use of statistical data. • Gather, classify, organize, and display using tables, tally charts, and graphs (pictographs, block graphs, and bar graphs) and interpret results. • Describe methods, analyse results, and make decisions. • Communicate findings and recommendations using vocabulary associated with statistics. • Demonstrate an understanding of mode and mean Solve problems involving mean/average.	**MEASUREMENT** **Linear: Perimeter** https://www.youtube.com/watch?v=g4rkjj_PNWg https://www.mathsisfun.com/definitions/perimeter.html https://www.khanacademy.org/math/cc-third-grade-math/3rd-perimeter/imp-perimeter/v/perimeter-of-a-shape https://learn.moe.gov.tt/pluginfile.php/350740/mod_resource/content/1/12%2008%2020%20GEOMETRY%20Solids%20and%20Plane%20Shapes-%20Shapes%20with%20same%20perimeter.pdf Assessment https://www.iknowit.com/lessons/d-perimeter.html https://learn.moe.gov.tt/pluginfile.php/350864/mod_resource/content/1/13%2008%2020%20MEASUREMENT%20Perimeter.pdf https://uk.ixl.com/maths/year-5/perimeter-word-problems **Mass/Weight** https://www.youtube.com/watch?v=4HnyNMhkBs0 https://www.youtube.com/watch?v=xK6j5BnVIdo https://www.youtube.com/watch?v=G0UoVYbsl50 https://www.youtube.com/watch?v=vbX83p0xJ9c Assessment https://www.faspassmaths.com/sea-past-paper-solutions https://www.khanacademy.org/math/cc-third-grade-math/imp-measurement-and-data/imp-mass/e/measure-mass

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		Time https://www.youtube.com/watch?v=UhMM68fq9FA https://www.youtube.com/watch?v=7PkpCDrDVHs Assessment https://www.thatquiz.org/tq-g/math/time/ https://learn.moe.gov.tt/pluginfile.php/350737/mod_resource/content/1/12%2008%2020%20MEASURENEMT-%20Time.pdf **Volume** https://uk.ixl.com/maths/year-5/volume-of-irregular-figures-made-of-unit-cubes **Area** https://learn.moe.gov.tt/pluginfile.php/350743/mod_resource/content/1/12%2008%2020%20MEASUREMENT%20Area.pdf https://uk.ixl.com/maths/year-3/area-of-figures-on-grids https://uk.ixl.com/maths/year-6/area-and-perimeter-word-problems **STATISTICS** https://www.youtube.com/watch?v=zi7qQ2eHZlc https://www.worksheetfun.com/2016/01/28/tally-chart-1-worksheet/ https://www.youtube.com/watch?v=my6LVtFrzAk&t=9s https://www.youtube.com/watch?v=ReW4MPqXTvA&t=68s https://www.youtube.com/watch?v=k3aKKasOmIw https://www.youtube.com/watch?v=B1HEzNTGeZ4 https://video.search.yahoo.com/yhs/search?fr=yhs-adk-adk_sbyhp&hsimp=yhs-

Term	Learning Outcomes	Suggested Online Tools/Resources for Instruction
		adk_sbyhp&hspart=adk&p=tally+and+frequency#action=view&id=13&vid=6d7755dd1db19adc84fb1fa429ab1194 https://www.mathmammoth.com/preview/Mean_Mode_Bar_Graphs_Lesson_Grade_5.pdf https://learn.moe.gov.tt/pluginfile.php/351039/mod_resource/content/1/14%2008%2020%20S5%20STATISTICS%20-%20Mental%20Mathematics%20Statistics.pdf https://www.liveworksheets.com/gn1456697sl https://www.liveworksheets.com/cj551231ze https://www.liveworksheets.com/du1862209fz
Term III	• Mathematics Assessment Objectives on the **Revised Assessment Framework for the SEA 2021 – 2023** • Conduct of Review and Practice Tests	• SEA 2019 Mathematics Specimen Paper • SEA 2019 Mathematics Specimen Paper 2 • Revised Assessment Framework for the SEA 2021 – 2023 • SEA 2021 Mathematics Specimen Paper https://www.moe.gov.tt/publications/

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