Republic of Zambia

Ministry of Education, Science, Vocational Training and Early Education

Mathematics Syllabus

(Grades 1-7)

Published by the Curriculum development Centre
P O Box 50092
Lusaka

2013

VISION

Quality, lifelong education for all which is accessible, inclusive and relevant to individual, national and global needs and value systems.

PREFACE

The syllabus was produced as a result of the Curriculum review process carried out by the Ministry of Education, Science, Vocational Training and Early Education under the auspices of the Curriculum Development Centre (CDC). The curriculum reform process started way back in 1999 when the Ministry of Education commissioned five (5) curriculum studies which were conducted by the University of Zambia. These studies were followed by a review of the lower and middle basic and primary teacher education curriculum. In 2005 the upper basic education National survey was conducted and information from learners,parents,teachers, school managers, educational administrators,tertiary institutions traditional leaders civic leaders and various stakeholders in education was collected to help design a relevant curriculum ,.

The recommendations provided by various stakeholders during the Upper Basic Education National survey of 2005 and National symposium on curriculum held in June 2009 guided the review process.

The review was necessitated by the need to provide an education system that would not only incorporate latest social, economic, technological and political developments but also equip learners with vital knowledge, skills and values that are necessary to contribute to the attainment of Vision 2030.

The syllabus has been reviewed in line with the Outcome Based Education principles which seek to link education to real life experiences that give learners skills to access, criticize analyze and practically apply knowledge that help them gain life skills. Its competences and general outcomes are the expected outcomes to be attained by the leaners through the acquisition of knowledge, skills, techniques and values which are very important for the total development of the individual and the nation as a whole.

Effective implementation of Outcome Based Education requires that the following principles be observed: clarity of focus, Reflective designing, setting high expectations for all learners and appropriate opportunities.

It is my sincere hope that this Outcome Based syllabus will greatly improve the quality of education provided at Grades 1 to 7 level as defined and recommended in various policy documents including Educating Our Future`1996 and the `Zambia Education Curriculum Framework `2013.

Chishimba Nkosha
Permanent Secretary
MINISTRY OF EDUCATION,SCIENCE, VOCATIONAL TRAINING AND EARLY EDUCATION.

Acknowledgements

The syllabus presented here is a result of broad-based consultation involving several stakeholders within and outside the education system.

Many individuals, institutions and organizations were consulted to gather their views on the existing syllabus and to accord them an opportunity to make suggestions for the new syllabus. The Ministry of Education wishes to express heartfelt gratitude to all those who participated for their valuable contributions, which resulted in the development of this syllabus.

The Curriculum Development Centre worked closely with other sister departments and institutions to create this document. We sincerely thank the Directorate of Teacher Education and Specialized Services, the Directorate of Planning and Information, the Directorate of Human Resource and Administration, the Directorate of Open and Distance Education ,the Examinations Council of Zambia, the University of Zambia, schools and other institutions too numerous to mention, for their steadfast support.

We pay special tribute to co-operating partners especially JICA and UNICEF for rendering financial technical support in the production of the syllabus.

C.N.M Sakala (Mrs)
Director-Standard and Curriculum
MINISTRY OF EDUCATION, SCIENCE,VOCATIONAL TRAINING AND EARLY EDUCATION

TABLE OF CONTENTS

INTRODUCTION

Suggested Teaching Methodology

This Syllabus for Primary schools aims at enabling learners acquire mathematical knowledge, values and skills for the further study of the subject at the Junior Secondary level as well as apply it in their daily lives. It is for this reason that teachers should focus on encouraging communication of mathematical ideas among learners, emphasis problem solving and application to real life situations besides cultivating interest in the subjects.

The mathematical concepts and principles presented in this syllabus aim to encourage learners to think logically and critically and make connections between topics and with other subjects. To achieve this, teachers should put emphasis on teaching the subject in a manner where learners communicate their mathematical ideas as well as misconceptions. This approach will enhance learners' understanding and appreciation of mathematical concepts and ideas as they construct their own knowledge. Teachers will also need to refocus their teaching approaches and continuously sharpen their pedagogical skills in line with contemporary approaches in the teaching of the subject.

Further, since Mathematics is a discipline with hierarchical concepts and skills, teachers should present it in a systematic manner. In the design of the syllabus, effort has been made to sequence the topics across the entire course of study. Successfully interpretation and implementation of this syllabus however requires flexibility on the part of teachers in order for them to arrange the content in an easy to understand progression so as to improve mathematics education in the country.

Rationale

Mathematics is an important subject on the Zambian School curriculum. It enhances the learners' understanding of the world around and prepares them for further education. It also plays a key role as a tool for learning other subjects and learning areas. The subject fosters the development and improvement of learners' intellectual competence in logical reasoning, spatial visualization, analysis and abstract thought. When learners have acquired enough knowledge in mathematics they develop reasoning, thinking and problem solving skills. Mathematics is also important in science and technology subjects which are vital for the development of the country. It therefore equips the learner to live in the age of Science and technology and enable them contribute to social, economic development of the country.

Mathematics can also be an interesting subject when learners appreciate basic concepts and insights that will equip them to pursue mathematics education at higher levels.

Time and period allocation

Time allocation for this syllabus is at two levels; the lower (Grades 1 – 4) and the upper (Grades 5 – 7) primary.

Lower primary (Grades 1 – 4)

- The lower primary level will require **at least** six-30 minute periods per week to complete.

Upper primary (Grades 5 – 7)

- The upper primary level on the other hand will require **at least** six-40 minute periods per week to complete.

Assessment

Assessment is an important diagnostic tool in the teaching and learning process used to determine whether teaching and learning have taken place or not. It requires well defined rubrics to facilitate a fair and consistent assessment of learner's work as well as clearly defined performance targets at key stages and during the process of teaching and learning.

Classroom based continuous assessment must form an integral part of the implementation of this syllabus. This is in view of the value that this adds to the modification of instruction delivery thereby contributing to best practices by the teacher. In order to attain this, teachers are urged to employ various techniques of assessment according to the topics and themes at various levels. These methods may include learner observation, projects, tests, portfolios and projects among others.

For terminal assessment, the Examinations Council will provide guidelines on the objectives to be assessed in at specific levels both for selection and certification.

General Outcomes

- Mathematics fosters the development and improvement of learners' intellectual competence in logical reasoning, spatial visualization, analysis and abstract thought.
- Mathematics equips the learner to live in the age of Science and technology and enable them contribute to social, economic development of the country

GRADE 1

General Outcomes	Key Competences:
▪ Develop numeracy and arithmetic operations ▪ Develop mathematical concepts on shapes and diagrams	▪ Sort objects with respect to colour, size and shape ▪ Identify digits from0-9 ▪ Count given objects up to 20 ▪ Read and write numbers sequentially from 1-100 ▪ Identify and tell the meaning of addition and subtraction signs ▪ Recognise denominations of Zambian money (Coins and notes) ▪ Identify circles, rectangles and triangles. ▪

GRADE 1

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
1.1 NUMBERS AND NOTATION	1.1.1 Recognise, count, read and write numbers from 1 to 100 (including the meaning of zero). 1.1.2 Interpret numbers using ten as a unit 1.1.3 Order numbers in terms of magnitude. 1.1.4 Count in tens up to ten tens (100).	• Comparing number of objects by making one-to-one correspondence. • The meaning of zero • Counting from 1 to 100 (Use concrete objects and math songs/games/rhymes, ICT as well) • Reading and writing numbers from 1 to 100 • Interpreting numbers using ten as a unit (i.e. 12 is 10 and 2, 13 is 10 and 3 etc) • Recognizing that one number is more or less than the other • Counting numbers in tens up to 100.	• ***Identification*** of numerals • ***Communication*** through writing and counting • ***Comparison*** of number magnitude and ***ordering*** them. • ***Representation*** of numbers with 10 as a unit	• ***Awareness*** of numeration system • ***Team work*** through cooperative learning • ***Interest*** in the numbers and their order.
1.2 SETS	1.2.1 Sort objects according to size, colour and shape. 1.2.2 Match sets into one-to-one correspondence. 1.2.3 Place sets in order according to their cardinal numbers. 1.2.4 Assign numerals 0 to 10 to elements in a set. 1.2.5 Use cardinal and ordinal numbers in everyday life.	• Sorting objects according to size colour and shape. • Matching sets of objects into one-to-one correspondence. • Ordering sets according to their cardinal and ordinal numbers. • Counting the number of elements in a set (i.e. assign numerals 0 to 10 to elements in a set)	• ***Classification*** of objects. • ***Comparison*** of objects in real life. • ***Identification*** of various criteria for sorting objects. • ***Application*** of groups in real life.	• ***Curiosity*** to explore nature. • ***Appreciation*** of order in nature. • ***Team work*** through collaborative learning.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
1.3 ADDITION	1.3.1 Add whole numbers with sums up to 100. 1.3.2 Complete addition of number sentences.. 1.3.3 Apply addition to real life up to 100.	• Meaning of addition • Adding single digit numbers up to10 • Adding single digit numbers up to 18 horizontally (with carrying using the concept of ten as unit e.g. 8 + 5 as 8 +2 + 3). • Adding numbers in 10s up to100 (e.g. 20 + 10) • Adding numbers horizontally up to100 (without carrying) • Applying addition to real life (For Money, DO NOT USE NGWEE AS A FRACTION OF KWACHA AT THIS STAGE)	• ***Addition*** of single and double digit numbers using the concept of 10 as a unit. • ***Identification*** of the addition sign/symbol. • ***Application*** of addition to money.	• ***Awareness*** of the meaning of addition. • ***Accuracy*** in computations
1.4 SUBTRACTION	1.4.1 Subtract whole numbers up to 100. 1.4.2 Develop the concept of zero as a difference 1.4.3 Complete subtraction of number sentences 1.4.4 Apply addition to real life up to 100. 1.4.5 Carry out shopping activities involving money.	• Meaning of subtraction • Subtracting single digit numbers up to10 • Subtracting two digit numbers up to 18 by single digit number giving a single digit difference (e.g. 18 – 9, 17-9, 17-8,. . . 12- 3, 12-2, 11-2), horizontally (with borrowing using the concept of ten as unit e.g. 12-3 as 12-2-1or 10-3+2). • Subtracting numbers in 10s up to100 (e.g. 90 - 30) • Subtracting numbers horizontally up to 100 (without borrowing) • Developing the concept of zero • Relationship of subtraction to addition (e.g. 36 – 12 = 24 or 24 + 12 = 36).	• ***Subtraction*** of single and double digit numbers using the concept of 10 as a unit. • ***Identification*** of the subtraction sign/symbol. • ***Application*** of subtraction to money. • ***Relating*** subtraction to addition	• ***Awareness*** of the meaning of subtraction. • ***Accuracy*** in computations. • ***Team work*** through the shopping activity

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
		• Apply subtraction to real life up to 100. • Carrying out shopping activities involving money up to K100. (DO NOT USE NGWEE AS A FRACTION OF KWACHA AT THIS STAGE)		
1.5 NUMBER PATTERNS	1.5.1 Identify number patterns involving addition and subtraction up to 100	• Identifying number patterns involving addition and subtraction up to 100.	• ***Identification*** of number patterns • ***Ordering*** numbers	• ***Awareness*** in the arrangement of numbers.
1.6 PLANE SHAPES	1.6.1 Recognise squares, circles, rectangles and triangles. 1.6.2 Trace outline of squares, circles, rectangles and triangles. 1.6.3 Make pictures using shapes of squares, rectangle circles and triangles	• Recognizing squares, circles, rectangles and triangles • Tracing outlines of Shapes using concrete three dimensional shapes to draw squares, circles, rectangles and triangles • Making pictures using shapes of squares, circles, rectangles and triangles	• ***Recognition*** of squares, circles, rectangles and triangles.	• ***Appreciation*** of basic shapes • ***Creativity*** in combining basic shapes to make pictures.
1.7 MEASURES	1.7.1 Identify times of the day. 1.7.2 Tell days of the week 1.7.3 Name months of the year 1.7.4 Compare lengths of different objects.	• Identifying the times of the day using activities (morning, midday, afternoon, evening, night) • Days of the week • Months of the year. • Non standard measurements e.g. strides, feet, strings, heights such as heights of learners.	• ***Ordering*** days of the week and months of the year. • ***Comparing*** lengths of different objects.	• ***Awareness*** of times of the day and months of the year. • ***Curiosity*** of comparing lengths of different objects. • ***Time consciousness***

GRADE 2

General Outcomes	Key Competences:
▪ Develop numeracy and arithmetic operations ▪ Develop mathematical concepts on shapes and diagrams	▪ Count in tens up to 1 000 ▪ Identify and apply place values up to 1 000 ▪ Add and subtract numbers both vertically and horizontally up to 1 000 (without regrouping) ▪ Identify and tell the meaning of multiplication and division signs ▪ Arrange numbers sequentially up to 1 000 ▪ Memorise or master multiplication table of single digit numbers ▪ Draw rectangles, circles and triangles ▪ Differentiate objects in terms of their size, length and weight ▪ Tell time on a 12 hour clock to full hours (hourly interval)

GRADE 2

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
2.1 SETS	2.1.1 Describe sets in relation to real life situations. 2.1.2 State membership of a set using symbol $\in$, $\notin$ and { }	• Describing sets in relation to real life situations • Set notation; (Membership of a set using symbols $\in$ "a member of", $\notin$ "not a member of",) { } Empty set or no member in the set	• ***Communication*** through use of appropriate set symbols • ***Analysis*** of elements of a set	• ***Teamwork*** through cooperative learning. • ***Awareness*** of set notation symbols and their use
2.2 NUMBERS AND NOTATION	2.2.1 Count, read and write numbers up to 1,000. 2.2.2 Count in tens and hundreds up to 1,000 2.2.3 Identify place values of digits in given numbers. 2.2.4 Write numbers in expanded notation.	• Counting numbers up to 1,000 (Use mathematics songs/games/rhymes, ICT as well) • Reading and writing numbers up to 1,000 • Counting in tens and hundreds up to 1,000 • Identifying place values of digits in numbers up to 1,000 • Using the place value charts and the abacus • Writing numbers in expanded notation without and with words (e.g. 800+50+4 for 854 or 8 hundreds+5 tens + 4 Ones).	• ***Communication*** through writing • ***Observation*** of number patterns • ***Application*** to real life • ***Identification*** of numerals • ***Interpretation*** of numbers in terms of their place values	• ***Ordering*** numbers in tens • ***Awareness*** of place values in numbers • ***Teamwork*** through cooperative learning

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
2.3 ADDITION	2.3.1 Add whole numbers vertically with sums up to 100 (including carrying) 2.3.2 Add whole numbers with sums up to 1,000. 2.3.3 Carry out addition of quantities in real life situations (e.g. money, quantities)	• Adding whole numbers vertically with sums up to 100 including carrying • Adding whole numbers with sums up to 1,000 by expanded notation and regrouping ones, tens, hundreds and thousands • Adding whole numbers with sums up to 1,000 without regrouping • Applying the commutative law and zero property of addition • Adding numbers using number trees, wheels, and magic squares • Adding quantities in real life situations (e.g. money, number of items, people)	• ***Addition*** of double and triple digit numbers using the concept of 10 and 100 as a unit. • ***Application*** of addition in real life.	• ***Awareness*** of the role of place values in addition. • ***Accuracy*** in computations. • ***Team work*** through the shopping and marketing activity. • ***Appreciation*** of the commutative law. • ***Interest*** in addition using number tree, wheels and magic squares
2.4 SUBTRACTION	2.4.1 Subtract whole numbers vertically up to 100 (including borrowing) 2.4.2 Subtract whole numbers vertically up to 1,000. 2.4.3 Carry out subtraction and addition in real life. 2.4.4 Carry out practical shopping and marketing activities involving money up to K 1, 000.	• Subtracting whole numbers vertically up to 100 • Subtracting whole numbers vertically up to 1,000 by expanded notation and regrouping • Subtracting whole numbers up to 1,000 without regrouping • Subtracting whole numbers using number trees and wheels. • Application of Subtraction and Addition in real life. • Shopping and marketing activities involving money up to K 1, 000 (DO NOT USE NGWEE AS A	• ***Subtraction*** of single and double digit numbers using the concept of 10 as a unit. • ***Application*** of subtraction and addition to money. • ***Relating*** subtraction to addition	• ***Accuracy*** in computations. • ***Team work*** through the shopping activity

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
		FRACTION OF KWACHA AT THIS STAGE)		
2.5 MULTIPLICATION	2.5.1 Express multiplication as repeated addition 2.5.2 Multiply single digit numbers 2.5.3 Memorize the multiplication table of single digit numbers 2.5.4 Use Multiplication vocabulary 2.5.5 Apply Multiplication in real life situations	• Grouping items/objects in twos (2s), fives (5s), threes (3s), fours (4s) up to tens (10s) and finding their values • Understanding the concept of multiplication using some model (i.e. Multiplication as repeated addition – e.g. 2+2+2+2 = 4x2; 4+4 = 2x4; 3+3+3+3+3 = 5x3) • Multiplication sign • Multiplication vocabulary (***multiplicand***, ***multiplier***, factor, ***product***) • Multiplying single digits numbers. • Introduction to the single-digits number multiplication tables. • Commutative law of multiplication (Emphasis is on highlighting commutation of numbers rather than the Law i.e. 2x3 =3x2) • Property of one as an identity in multiplication (i.e. Any number multiplied by 1 equals that number) • Multiplying quantities in real life situations (application)	• ***Multiplication*** of single digit numbers • ***Accuracy*** in ***computations*** • ***Identification*** of the multiplication sign/symbol • ***Application*** of the commutative law	• ***Appreciation*** of the meaning of multiplication • ***Teamwork*** through cooperative learning
2.6 DIVISION	2.6.1 Express division as repeated subtraction or	• Understanding the concept of division as repeated subtraction or	• ***Division*** of double digit by	• ***Appreciation*** of the meaning of

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	sharing 2.6.2 Use division vocabulary 2.6.3 Divide numbers whose divisor and quotient are single digit. 2.6.4 Apply division in real life situations.	sharing • Using division vocabulary(divisor, dividend, quotient, remainder) • Divide single by single digits numbers. • Divide two digit by single digit numbers WITHOUT LEAVING A REMAINDER (Relate division to multiplication e.g. 7x8 = 56 which is 56÷7 = 8 or 56÷8 = 7) • Dividing quantities in real life situations (application)	single digit numbers • ***Accuracy*** in ***computations*** • ***Identification*** of the division sign/symbol • ***Application*** of division to real life	multiplication • ***Teamwork*** through cooperative learning
2.7 NUMBER PATTERNS	2.7.1 Recognize and use number patterns involving the four mathematical operations. 2.7.2 Determine the rule in the number pattern.	• Number patterns involving the four mathematical operations (+, -, ×, ÷) • Determining the rule in the number pattern • Ordering numbers in terms of magnitude	• ***Identification*** of rule in number pattern • ***Ordering*** numbers	• ***Curiosity*** to explore different number pattern.
2.8 MEASURES	2.8.1 Read and tell time in full hours 2.8.2 Measures of different objects using standard units. (cm, mm, m) 2.8.3 Find the perimeter of simple plane figures	• The analogue clock in relation to Morning, Midday, Afternoon, Evening, Night. • Time in full hours and minutes. (30 minute-interval) using the 12 hour analogue clock • Measuring length of shapes and objects using standard units (cm, mm, m). • Finding the perimeter of simple plane figures (square and rectangle)	• ***Reading*** and ***telling*** times in full hours • ***Measuring*** of different objects using standard units. (cm, mm, m)	• ***Awareness*** of usefulness of analogue clock. • ***Curiosity*** of measuring different objects.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
2.9 RELATIONS	2.9.1 Draw arrow diagrams to illustrate matching	• Matching sets using arrow to illustrate matching involving " addition and subtraction of two-digit numbers • Note: Range should be up to1000	• ***Matching*** of relations using arrow diagrams. • ***Interpretation*** of relations from arrow diagrams.	• ***Creativity*** of drawing diagrams. • ***Teamwork*** through cooperative learning.
2.10 STATISTICS	2.10.1 Collect and present data using pictures	• Data collection methods • Data presentation (pictographs only)	• ***Collection*** and ***presentation*** of data using pictures • **Interpretation** of pictographs.	• ***Teamwork*** through cooperative learning. • **Curiosity** in collecting data.
2.11 PLANE SHAPES	2.11.1 Identify right angle with squared paper or paper folding. 2.11.2 Draw rectangle and square on squared paper. 2.11.3 Identify side and vertex of rectangle and square.	• Identifying right angle with squared paper or paper folding • Drawing rectangle and square on squared paper. • Identifying side and vertex (limit usage of term to 'CORNER') of rectangle and square	• ***Identification*** of right angle. • ***Drawing*** rectangle and square on squared paper.	• ***Appreciation*** in drawing rectangle and square on squared paper.
2.12 SOLID SHAPES	2.12.1 Recognise cuboid, cube, cylinder and sphere. 2.12.2 Mould cuboid, cube, cylinder and sphere using clay plasticine	• Recognising cuboid, cube, cylinder and sphere • Moulding cuboid, cube, cylinder and sphere using clay or plasticine	• ***Recognition*** of basic solid shapes. • **Moulding** of basic solid shapes.	• ***Awareness*** of solid basic shapes. • ***Creativity*** in moulding basic solid shapes.

GRADE 3

General Outcomes	Key Competences:
▪ Develop numeracy and arithmetic operations ▪ Develop mathematical concepts on shapes and diagrams	▪ Describe and list members of a given set ▪ Add and subtract numbers vertically up to 100 000 (by regrouping) ▪ Multiply and divide one number by another (Long division and multiplication) ▪ Generate number sequence after establishing rule (using the four operations) ▪ Order numbers and appropriately use the symbols >, <, = and ≠ ▪ Use rule to measure length and width of given shapes and objects ▪ Tell time on a 24 hour analogue clock to quarter of an hour ▪ Read and translate a calendar ▪ Acquire an understanding of the concept of fractions ▪ Add and subtract fractions with a common denominator

GRADE 3

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
3.1 SETS	3.1.1 Describe a set by listing its members. 3.1.2 Recognise and use the symbols "=" equal to, "≠" not equal to.	• Sets and notation • Listing members of a set • Set symbols: "=" equal to, "≠" not equal to. (Also recap on "∈" member of, "∉" not a member of, "{ }" braces) • Applying sets in real life situations.	• ***Communication*** of set notation through ***symbolization*** • ***Application*** of the concept of sets in real life	• ***Teamwork*** through cooperative learning. • ***Awareness*** of set notation or symbolisation.
3.2 NUMBERS AND NOTATION	3.2.1 Read and write numbers up to 1,000,000. 3.2.2 Express a number in expanded notation.	• Reading and writing numbers up to 1, 000,000 (draw attention of learners to the number structure or repetition i.e. 1, 10, 100, 1000, 10000 . .) • Expressing numbers in expanded notation.	• ***Communication*** through writing. • ***Presentation*** of numbers in expanded notation.	• ***Accuracy*** in recognizing and reading. • ***Application*** of numeration in real life.
3.3 ADDITION	3.3.1 Add whole numbers with sums up to 100,000. 3.3.2 Carry out addition of numbers in real life situations.	• Addition of whole numbers with sums up to 100,000 by regrouping (Expanded notation). • Addition of whole numbers with sums up to 100,000 without regrouping. • Adding whole numbers by using number trees, number wheels and magic squares • Applying addition of numbers in real life situations (e.g. money, number of items, Lengths)	• ***Addition*** of up to five digit numbers using the concept of 10, 100, 1000 and 10000 as a unit. • ***Application*** of addition in real life.	• ***Awareness*** of the role of place values in addition. • ***Accuracy*** in computations.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
3.4 SUBTRACTION	3.4.1 Subtract whole numbers up to 100,000 3.4.2 Carry out subtraction and addition in real life situation.	• Subtraction of whole numbers up to 100,000 by regrouping. (vertical subtraction, expanded notation) • Subtraction of whole numbers up to 100,000 without regrouping. (vertical subtraction) • Subtracting whole numbers using number trees, number wheels and magic squares • Applying subtraction and addition in real life situations (e.g. money, number of items, Lengths).	• ***Subtraction*** of up to five digit numbers using the concept of 10, 100, 1000 and 10000 as a unit. • ***Application*** of subtraction and addition to money. • ***Relating*** subtraction to addition	• ***Accuracy*** in computations. • ***Teamwork*** through cooperative learning
3.5 MULTIPLICATION	3.5.1 Multiply two and three digit numbers by a single digit number vertically. 3.5.2 Apply multiplication in real life situation.	• Multiplying two and three digit numbers by a single digit number using vertical multiplication • Applying multiplication in problems involving money.	• ***Multiplication*** of two and three digit by single digit numbers • ***Accuracy*** in ***computations*** • ***Application*** of place values	• ***Appreciation*** of the use of multiplication in real life • ***Teamwork*** through cooperative learning
3.6 DIVISION	3.6.1 Divide two and three digit numbers by single digit number using Long division (with remainders).	• Dividing single and two-digit numbers by single digit numbers WITH REMAINDERS. • Dividing two and three digit	• ***Division*** of two and three digit by single digit numbers • ***Accuracy*** in	• ***Awareness*** of the concept of remainder • ***Teamwork*** through

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	3.6.2 Demonstrate multiplication and division skills in real life situations.	numbers by single digit number WITH REMAINDERS using Long division. • Long division • Applying multiplication and division in real life situations involving money.	***computations*** • ***Identification*** of the long division symbol • ***Application*** of division to real life	cooperative learning
3.7 NUMBER PATTERNS	3.7.1 Order numbers using mathematical symbols ">", "<", "=" and "≠".	• Using mathematical symbols ">", "<", "=" and "≠" to order numbers.	• ***Analysis*** to determine magnitude	• ***Appreciation*** for systematic arrangement
3.8 FRACTIONS	3.8.1 Identify and represent proper fractions as equal parts of a whole. 3.8.2 Draw and shade proper fractions. 3.8.3 Add and subtract proper fractions with common denominator. 3.8.4 Apply proper fractions in real life situations	• Identifying proper fractions as equal parts of a whole(Utilize concrete and semi concrete objects as much as possible) • Names of parts (denominator, numerator, division line) • Common fractions. (Half, one quarter, three quarters, one third, two thirds, one fifth, one tenth etc.) • Drawing and shading proper fractions • Adding and subtracting proper fractions having a common denominator • Fractions in real life situations (e.g. liquids, paper folding)	• ***Identification*** of proper fractions • ***Addition*** and ***subtraction*** of proper fractions • ***Representation*** of proper fractions as equal parts of a whole in real life.	• ***Appreciation*** of the concept of proper fractions • ***Accuracy*** in adding and subtracting proper fractions

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
3.9 MEASURES	3.9.1 Tell time at specified intervals. 3.9.2 Read and use the calendar 3.9.3 Describe the unit for measuring long distances (Km). 3.9.4 Describe mass and the standard units for its measure 3.9.5 Describe capacity and the standard units for its measure	• Telling time to half, quarter of an hour and five minute intervals (using the 24 hour clock) • Calendar • Standard unit for measuring long distances (Km) • Describing mass • Standard units for measuring mass (grammes, Kilogrammes) • Describing capacity • Standard units for measuring capacity (litres, milliliters)	• ***Telling*** time at specified intervals. • ***Reading*** and use the calendar • ***Describe*** the standard unit for measuring distance, mass and capacity.	• ***Accuracy*** in telling time. • ***Appreciation*** of standard units in measures.
3.10 STATISTICS	3.10.1 Collect and present ungrouped data on a frequency table	• Data collection methods • Data presentation(Frequency table) table involving use of tally marks(Including bundling fives)	• ***Presentation*** of ungrouped data on a frequency table. • ***Interpretation*** of frequency tables.	• ***Interest*** in collecting data. • ***Appreciation*** of presenting data on a frequency table.
3.11 RELATIONS AND MAPPINGS	3.11.1 Draw Arrow diagrams to illustrate one-to-one mappings	• Relations and mappings (involving "Times 2 plus 1 etc" Whole numbers in range should not exceed 100, 000 • Applying relations and mappings in real life situations (Should be related to proportion, number patterns and graphs)	• ***Matching*** of one-to-one mapping using arrow diagrams. • ***Interpretation*** of one-to-one mapping	• ***Creativity*** of drawing arrow diagrams. • ***Awareness*** of one-one mapping
3.12 PLANE SHAPES	3.12.1 Identify right angled triangle	• Identifying right angled triangle by	• ***Drawing*** right-	• ***Curiosity*** in

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	by folding rectangular and squared paper 3.12.2 Draw right angled triangle on squared paper	folding rectangular and squared paper • Drawing right angled triangle on squared paper	angled triangle.	making different right angled triangles using squared paper.

GRADE 4

• Develop algebraic, geometry and arithmetic skills in mathematics. • develop mathematical concepts on shapes and diagrams • Solve mathematical challenges in everyday life through problem solving	• Use the symbols =, ∈, ∉, and { } appropriately in set notation • Apply the four operations to resolve practical problems with numbers up to 1 000 000 • Solve practical problems dealing with measurement of length and convert between units • Calculate area of squares and triangles • Apply fractions in resolving real life problems

GRADE 4

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
4.1 SETS	4.1.1 Identify equivalent sets. 4.1.2 Identify subsets and use the subset symbol "⊂". 4.1.3 Apply sets to solve problems in real life situations	• Equivalent sets • Subsets and the use of the symbol "⊂" (is a subset of) • Applying sets to solve problems in real life situations (creation of order)	• ***Interpretation*** of the meaning of subset • ***Identification*** of the subset symbol • ***Communication*** through the use of subset symbol in set notation	• ***Teamwork*** through collaborative learning. • ***Awareness*** of set equivalence
4.2 NUMBERS AND NOTATION	4.2.1 Read and write numbers up to 1,000,000,000 4.2.2 Express a number in expanded notation	• Reading and writing numbers up to 1,000,000,000. (Draw attention of learners to the number structure or repetition i.e. 1, 10, 100, 1000, 10000 . . .) • Expressing a ten digit number in expanded notation	• ***Communication*** through writing. • ***Presentation*** of numbers in expanded notation. • ***Application*** of numeration in real life.	• ***Accuracy*** in recognizing and reading numbers.
4.3 ADDITION	4.3.1 Add whole numbers with sums up to 1,000,000. 4.3.2 Apply addition to solve problems in real life.	• Adding whole numbers with sums up to 1,000,000 in expanded form by regrouping ones, tens, hundreds, and thousands. • Adding whole numbers with sums up to 1,000,000 without regrouping. • Problems in real life situations (e.g. mass, distance, capacity, money up to K1, 000,000)	• ***Addition*** of up to six digit numbers using the concept of 10, 100, 1000, 10000 and 100000 as a unit. • ***Application*** of addition in real life. •	• ***Awareness*** of the role of place values in addition. • ***Accuracy*** in computations.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
4.4 SUBTRACTION	4.4.1 Subtract whole numbers up to 1,000,000 4.4.2 Apply subtraction and addition to solve problems in real life.	• Subtracting whole numbers up to 1,000,000 in expanded notation • Subtracting whole numbers up to 1,000,000 without regrouping. • Solving problems in real life • Using subtraction and addition to solve problems involving mass, distance, capacity, money up to K1, 000,000.	• ***Subtraction*** of up to six digit numbers using the concept of 10, 100, 1000, 10000 and 100000 as a unit. • ***Application*** of subtraction and addition in real life.	• ***Awareness*** of the role of place values in subtraction. • ***Accuracy*** in computations.
4.5 MULTIPLICATION	4.5.1 Multiply numbers by 10, 100 and 1000 using short multiplication. 4.5.2 Multiply two and three by two digit numbers using vertical multiplication. 4.5.3 Apply the properties of zero (0) and one (1) in multiplication 4.5.4 Apply multiplication to solve problems in real life.	• Multiplying numbers by 10, 100 and 1000 using short multiplication (include multiples of 10 such as 20, 30, 40) e.g. 12x10 = 120 and 12x20 = 12x(10x2)=240 • Multiplying two and three by two digit numbers using vertical multiplication. • Applying the properties of zero (0) and one (1) in multiplication • Problems in real life such as those involving mass, distance, capacity, money.	• ***Multiplication*** of two and three digit by two digit numbers • ***Accuracy*** in ***computations*** • ***Application*** of place values	• ***Appreciation*** of the use of multiplication in real life • ***Teamwork*** through cooperative learning
4.6 DIVISION	4.6.1 Divide numbers by 10, 100 and 1000 using short division. 4.6.2 Divide two and three digit by two digit numbers using long division (with remainders). 4.6.3 Apply division to solve problems in real life	• Dividing numbers by 10, 100 and 1000 using short division • Dividing two and three digit by two digit numbers using long division (with remainders) • Dividing to solve problems in real life such as those involving mass, distance, capacity, money.	• ***Division*** of two and three digit by two digit numbers • ***Accuracy*** in ***computations*** • ***Application*** of division to real life	• ***Teamwork*** through cooperative learning

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
4.7 NUMBER PATTERNS	4.7.1 Identify patterns and complete number sequences.	• Identifying Number Patterns • Completing number sequences • Generate number patterns	• ***Identification*** of rule in number pattern	• ***Creativity*** in the four operations • ***Appreciation*** for systematic arrangement
4.8 FRACTIONS	4.8.1 Describe equivalent fractions 4.8.2 Arrange the common fractions either in ascending or descending order using proportion line 4.8.3 Identify and represent improper and mixed fractions 4.8.4 Convert mixed fractions to improper fractions and vice versa. 4.8.5 Add and subtract proper, improper and mixed fractions with common denominators. 4.8.6 Apply improper fractions to solve problems in real life	• Describing equivalent fractions • Arranging the common fractions either in ascending or descending order using proportion line • Using symbols $>$, $<$ and $=$,to order fractions in terms of magnitude • Identifying improper and mixed fractions • Converting mixed fractions to improper fractions and vice versa. • Adding and subtracting proper, improper and mixed fractions with a common denominator • Applying improper fractions in everyday real life.	• ***Distinction*** between proper, improper and mixed fractions • ***Conversion*** of mixed fractions to improper fractions and vice versa. • ***Arrangement*** of common fractions using proportion line • ***Addition*** and ***subtraction*** of improper and mixed fractions	• ***Appreciation*** of equivalent fractions • ***Accuracy*** in adding and subtracting improper and mixed fractions
4.9 ANGLES	4.9.1 Describe an angle. 4.9.2 Identify types of angles 4.9.3 Use a protractor to measure	• Describing an Angles • Types of angles (right angle, acute angle, straight angle, reflex,	• ***Identification*** of types of angles • ***Using*** and	• **Curiosity** in using protractor • ***Accuracy*** of

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	and draw angles up to 180°.	obtuse and a complete revolution.) • Using a protractor to measure and draw angles up to 180° • angles in real life situations(time, compass direction	***handling*** of protractor appropriately.	measuring angles.
4.10 PLANE SHAPES	4.10.1 Draw a rectangle and square using protractor and set square 4.10.2 Identify isosceles and equilateral triangles 4.10.3 Draw the equilateral and isosceles triangles using protractor and set square	• Drawing a rectangle and square using protractor and set square • Identifying an isosceles and equilateral triangles • Drawing an isosceles and equilateral triangle using protractor and set square	• ***Application*** of protractor to draw plane shapes • ***Identification*** of isosceles and equilateral triangles	• ***Curiosity*** of drawing plane shapes.
4.11 MEASURES	4.11.1 Determine duration of time elapsed between events 4.11.2 Relate seconds, minutes, hours and day. 4.11.3 Illustrate the meaning of area 4.11.4 Describe standard units to measure area. (cm^2, mm^2, m^2) 4.11.5 Derive the formulae for finding area of rectangle and square 4.11.6 Find the area of a rectangle and square	• Determining duration of time between events (Subtraction and addition of time). • Describing seconds • Relating seconds, minutes, hours and day • Understanding the concept of area. • Standard units to measure area • Formulae for finding area of rectangle and square • Deriving the formulae for area (rectangle and square) • Area of a rectangle and square	• ***Determination*** of duration of time between events. • ***Deriving*** the formulae for finding area of rectangle and square.	• Accuracy in determing duration of time • ***Curiosity*** in deriving the formulae.
4.12 RELATIONS AND MAPPINGS	4.12.1 Illustrate one-to-many relation using arrow. 4.12.2 Apply relations in real life situations.	• One-to-many relations (“is greater than” , “ is less than”, “ is greater or equal to “) using arrow diagrams • With domain: up to 100 000	• ***Matching*** of one-to-many relation using arrow diagrams. • ***Interpretation*** of	• ***Creativity*** of drawing arrow diagrams. • ***Awareness*** of one-many

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
		(Only whole numbers) • Relations and mappings in real life situations	one-to-many relation.	relation.
4.13 STATISTICS	4.13.1 Read and interpret line graphs 4.13.2 Collect and present data on a line graph	• Interpreting line graphs • Data collection • Data presentation (Line graph)	• ***Interpretation*** of line graphs • ***Representation*** of data on a line graph.	• ***Appreciation*** of usefulness of line graphs.

GRADE 5

General Outcomes	Key Competences:
▪ Develop algebraic, geometry and arithmetic skills in mathematics. ▪ develop mathematical concepts on shapes and diagrams ▪ Solve mathematical challenges in everyday life through problem solving	▪ Convert numerals from Arabic to Roman numeration and vice versa ▪ Order both Arabic and Roman numerals in terms of magnitude ▪ Carry out combined operations observing the order of operations ▪ Apply factors and multiples to solve real life problems ▪ Add and subtract fractions with different denominators ▪ Solve problems involving length, capacity and mass ▪ Multiply fractions by whole numbers ▪ Divide whole numbers by fractions and vice versa ▪ Convert common fractions into decimals and vice versa ▪ Solve problems involving percentages ▪ Present data on a stem-leaf plot and on a bar graph

GRADE 5

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
5.1 NUMBERS AND NOTATION	5.1.1 Identify Roman numeration system. 5.1.2 Convert numerals from Arabic to Roman numeration and vice versa. 5.1.3 Order Roman numerals.	• Identifying the roman numeration system. • Converting Arabic to Roman numeration and vice versa • Ordering Roman numerals.	• ***Identification*** of Roman and Arabic numeration • ***Communication*** through writing both Roman and Arabic numerals • ***Ordering*** Roman and Arabic numerals	• ***Accuracy*** in recognizing and reading numbers • ***Awareness*** of similarities and differences in Arabic and Roman numeration systems
5.2 ADDITION	5.2.1 Add whole numbers using the number line. 5.2.2 Apply addition using the number line to solve problems in real life situations.	• Addition on the number line. • Addition using the number line to solve problems in real life situations. (To be connected to the addition of integers)	• ***Addition*** using the number line. • ***Application*** of addition in real life.	• ***Awareness*** of addition on the number line. • ***Accuracy*** in computations.
5.3 SUBTRACTION	5.3.1 Subtract whole numbers using a number line. 5.3.2 Apply subtraction and addition using the number line to solve problems in real life situations.	• Subtraction on the number line • Subtraction and addition using the number line to solve problems in real life situations (To be connected to the addition of integers).	• ***Subtraction*** using the number line. • ***Application*** of addition and subtraction in real life.	• ***Awareness*** of subtraction on the number line. • ***Accuracy*** in computations.
5.4 COMBINED OPERATIONS	5.4.1 Perform combined operations 5.4.2 Apply the commutative, associative and distributive laws to four basic mathematical	• Combined operations or order of operations – BODMAS (related to real life problems i.e. length, mass, temperature, capacity and	• ***Computation*** in the correct order • ***Application*** of the four operations in	• ***Awareness*** of order of operations. • ***Accuracy*** in

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	operations.	time) • Applying the commutative, associative and distributive laws to four basic mathematical operations.	real life	computations.
5.5 SETS	5.5.1 List all sub sets of a given set. 5.5.2 Describe sets of numbers. 5.5.3 Describe subset in a Venn diagram.	• Proper and improper subsets (For sets with up to 4 elements). • Sets of numbers (Natural, Whole, Even, Odd, Prime and Composite). • Subsets in Venn diagrams.	• ***Identification*** of proper and improper subsets. • ***Representation*** of subsets within Venn diagram. • ***Description*** of sets of numbers.	• ***Awareness*** of usefulness of Venn diagrams. • ***Curiosity*** in the usage of Venn diagrams.
5.6 FACTORS AND MULTIPLES	5.6.1 Identify factors of given numbers 5.6.2 Identify the Highest Common Factor (HCF) 5.6.3 Identify multiples of a given number 5.6.4 Identify the Lowest Common Multiple (LCM) by listing	• Identifying Factors • Listing factors of two numbers and Identifying Highest Common Factor (HCF) or Greatest Common Divisor (GCD) • Identifying Multiples of a given numbers • Listing multiples of two numbers and Identifying Lowest Common Multiple (LCM).	• ***Identification*** of factors and multiples.	• ***Awareness*** of factors and multiples
5.7 FRACTIONS	5.7.1 Identify equivalent fractions by multiplying or dividing the same number with numerator and denominator 5.7.2 Express fractions with different denominators to the same denominator 5.7.3 Add and subtract proper, improper and mixed fractions with different	• Identifying equivalent fraction by multiplying or dividing the same number with numerator and denominator • Expressing fractions with different denominators to the same denominator • Addition and subtraction of fractions with different	• ***Identification*** of equivalent fractions • ***Addition*** and ***subtraction*** of fractions with different denominators.	• ***Appreciation*** of Reduction of fractions • ***Awareness*** of importance of factors and multiples to fractions.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	denominators. 5.7.4 Apply knowledge of fractions to solve problems in real life situations	denominators. • Fractions in real life situations		
5.8 DECIMALS	5.8.1 Relate common fractions to decimals. 5.8.2 Describe decimal numbers by their names (up to 2 decimal places) 5.8.3 Add and subtract decimal numbers. 5.8.4 Multiply decimal numbers by whole numbers. 5.8.5 Divide decimal numbers by whole numbers (up to 2 decimal places WITHOUT REMAINDER). 5.8.6 Apply decimals to solve problems in real life situations.	• Relating common fractions to decimals up to 2 decimal places (i.e. $\frac{1}{10}$ = 0.1, $\frac{1}{100}$ = 0.01) • Understanding the concept of decimals • Decimal numbers and their place values (names for 0.1, 0.01 i.e. tenths, hundredths) (note: *presentation of decimal numbers on the number line could aid understanding.)* • Addition and subtraction of decimals numbers up to 2 decimal places • Multiplying and division of decimal numbers with one or two digits • Decimals in real life situations (e.g. problems involving money-Kwacha and ngwee, temperature and other measures)	• ***Identification*** of decimal numbers • ***Accuracy*** in ***Computation*** of problems involving decimal numbers • ***Application*** of decimal numbers in real life	• ***Appreciation*** of relationship between common fractions and decimal numbers • ***Curiosity*** in decimal numbers and their use.
5.9 SOCIAL AND COMMERCIAL ARITHMETIC	5.9.1 Prepare simple household bills (budgeting). 5.9.2 Apply simple ready-reckoners 5.9.3 Read and interpret water and electricity bills.	• Budgeting • Ready-reckoner • Meter reading (water and electricity bills)	• **Preparation** of simple household bills. • **Application** and of	• **Accuracy** reading ready reckoners, water and electricity bills.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
			Ready-reckoner. • **Interpretation** of water and electricity bills.	• **Curiosity** using ready reckoners.
5.10 PLANE SHAPES	5.10.1 Identify and draw perpendicular and parallel lines 5.10.2 Describe trapezium, rhombus and parallelogram 5.10.3 Draw trapezium, rhombus and parallelogram. 5.10.4 Identify the uses of a pair of compasses 5.10.5 Use a pair of compass to draw a circle 5.10.6 Identify centre, diameter and radius of a circle	• Identifying and drawing perpendicular and parallel lines using set squares. • Describing trapezium, rhombus and parallelogram • Drawing trapezium, rhombus and parallelogram • Identifying the uses of a pair of compasses. • Using a pair of compass to draw a circle. • Identifying centre, diameter and radius of a circle.	• Drawing perpendicular and parallel lines • Drawing trapezium, rhombus and parallelogram. • Using and handling pair of compasses. and set squares appropriately	• ***Appreciation*** in drawing plane shapes. • ***Curiosity*** in drawing circles.
5.11 SOLID SHAPES	5.11.1 Identify face, vertex and edges of cuboids and cubes 5.11.2 Draw nets of cuboids and cubes 5.11.3 Draw/sketch cuboid and cube	• Identifying face, vertex and edges on cuboids and cubes (by observing concrete/semi-concrete objects) • Number of vertices, edges and faces of cuboid and cubes • Describing a net of a cuboid and cube • Drawing nets of cuboids and cubes by unfolding them • Drawing/sketching cuboid and cube	• ***Identification*** of face, vertex and edges of cuboids and cubes • ***Drawing*** of nets of cuboids and cubes. • **Drawing/sketching** of cuboid and cube.	• ***Curiosity*** of different types of net from one cuboid or cube**.** • ***Appreciation*** in drawing plane shapes. • ***Curiosity*** in drawing circles.
5.12 MEASURES	5.12.1 Find the perimeter of triangle, parallelograms, trapezium, rhombus and composite shapes 5.12.2 Derive formula for area of	• Finding perimeter of triangle, parallelograms, trapezium, rhombus and composite shapes • Deriving formulae for area of	• ***Calculation*** of perimeter of plane shapes. • ***Computation*** of area	• Curiosity of deriving formula for finding area.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	triangle, parallelograms, trapezium and rhombus. 5.12.3 Calculate areas of triangle, parallelograms, trapezium, rhombus and composite shapes 5.12.4 Describe volume 5.12.5 Use standard units to measure volume (cm^3, m^3) 5.12.6 Relate volume to capacity 5.12.7 Derive the formulae for finding volume 5.12.8 Calculate the volume of cubes and cuboids	triangle, parallelograms, trapezium and rhombus • Calculating areas of triangle, parallelograms, trapezium, rhombus and composite shapes • Describing and using standard units to measure volume (cm^3, m^3) • Relating volume to capacity (cm^3, m^3, Milliliters, litres) • Formulae for finding volume • Deriving the formulae for volume (Cube and cuboid) • Calculating the volume of cubes and cuboids	of plane shapes. • ***Identification*** of volume and formulae for finding it.	• Awareness of volume of solids and capacity.
5.13 STATISTICS	5.13.1 Understand stem-leaf plot and on a bar graph. 5.13.2 Collect and present data on a stem-leaf plot and on a bar graph	• Understanding of stem-leaf plot and on a bar graph. • Data collection and presentation (on a stem-leaf plot , and on a bar graph)	• ***Interpretation*** of graphs. • ***Representation*** of data bar graph	• ***Teamwork*** in collecting data • ***Appreciation*** of presenting data in graphs.
5.14 RELATIONS AND MAPPINGS	5.14.1 Illustrate a one-to-many and many-to-one relations 5.14.2 Apply knowledge of relations and mappings in real life situations.	• One-to-many and many-to-one relations (involving "is A factor of" , " is a multiple of ", etc) Domain: whole numbers up to 100 000 • Relations and mappings.	• ***Identification*** one-to-many and many-to-one relations. • ***Application*** of relations and mappings.	• ***Appreciation*** of one-to-many and many-to-one relations

GRADE 6

General Outcomes	Key Competences:
▪ Develop algebraic, geometry and arithmetic skills in mathematics. ▪ develop mathematical concepts on shapes and diagrams ▪ Solve mathematical challenges in everyday life through problem solving	▪ Convert numerals from Arabic to Roman numeration and vice versa ▪ Order both Arabic and Roman numerals in terms of magnitude ▪ Carry out combined operations observing the order of operations ▪ Apply factors and multiples to solve real life problems ▪ Add and subtract fractions with different denominators ▪ Solve problems involving length, capacity and mass ▪ Multiply fractions by whole numbers ▪ Divide whole numbers by fractions and vice versa ▪ Convert common fractions into decimals and vice versa ▪ Solve problems involving percentages ▪ Present data on a stem-leaf plot and on a bar graph

GRADE 6

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
6.1 INDEX NOTATION	6.1.1 Describe index notation. 6.1.2 Change a number in index form to expanded notation and vice versa. 6.1.3 Evaluate numbers in index notation with positive bases and indices.	• Describing Index notation as the repetition of multiplication of numbers with the same base ($2x2x2 = 2^3$). • Expanded notation with positive bases and powers ranging from 1 to 5. • Evaluating numbers in index notation with positive bases and indices.	• ***Interpretation*** of the meaning of index notation • ***Computation*** of numbers in index notation	• ***Awareness*** of index notation
6.2 SETS	6.2.1 Describe the intersection, union in a Venn diagram. 6.2.2 Use symbols of intersection "∩", union "U" (and subset "⊂" as recap). 6.2.3 Find number of subsets of a given set using the formula 2^n. 6.2.4 Apply the knowledge of sets in real life situations.	• The intersection (includes the set within a set-*subset* and disjoint sets) and union set in a Venn diagrams. • Intersection, union sets and subset including. Symbolisation (intersection "∩", union "U" (and subset "⊂" as recap). • Subsets of a given set by listing and using the formula 2^n. • Applying the knowledge of sets in real life situations (i.e. intersection, union, and subset).	• ***Interpretation*** of intersection and union sets. • ***Communication*** through the use of correct intersection and union symbols. • ***Illustration*** of intersection and union on a Venn diagram • ***Computation*** of subsets in given set.	• ***Appreciation*** of relationship between listing and the formula method of finding subsets. • ***Awareness*** of the subset computation method.
6.3 PRIME FACTORS	6.3.1 Describe and list prime and composite numbers. 6.3.2 Identify prime factors of given numbers	• Prime and composite numbers • Prime factors of given numbers • Express a number as a product	• ***Identification*** of prime factors • ***Representation*** of a number as a	• ***Curiosity*** in exploring prime factors

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
		of its prime factors	product of its prime factors	
6.4 FRACTIONS	6.4.1 Multiply fractions by whole numbers 6.4.2 Multiply a fraction by another fraction. 6.4.3 Divide fractions by whole numbers 6.4.4 Divide whole numbers by fractions 6.4.5 Divide a fraction by another fraction 6.4.6 Apply fractions to solve problems in real life	• Understanding the concept of multiplication of fractions • Multiplying fractions by whole numbers • Multiplying a fraction by another fraction. • Understanding the concept of division of fractions • Dividing fractions by whole numbers • Dividing whole numbers by fractions • Dividing a fraction by another fraction • Applying multiplication and division of fractions to solve problems in real life	• ***Multiplication*** and ***Division*** of fractions • ***Application*** of multiplication and division of fractions in real life	• ***Accuracy*** in multiplication and division of fractions
6.5 DECIMALS	6.5.1 Describe decimal numbers by their names (up to 3 decimal places) 6.5.2 Add and subtract decimal numbers up to 3 decimal places 6.5.3 Multiply decimal numbers by decimal numbers 6.5.4 Divide decimal numbers by decimal numbers (up to 3 decimal places (INCLUDING REMAINDER)	• Describing decimal numbers by their names (up to 3 decimal places) • Adding and subtracting decimal numbers up to 3 decimal places • Multiplication and division of decimals up to 3 decimal places	• ***Accuracy*** *in* ***Computation*** of problems involving decimal numbers • ***Problem solving*** in real life situations.	• ***Curiosity*** in decimal numbers and their use. • ***Team work*** through cooperative learning
6.6 APPROXIMATION	6.6.1 Round off to the nearest unit.	• Rounding off to the nearest	• ***Estimation*** of	• ***Decision-making*** in

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	6.6.2 Round off to the nearest decimal places 6.6.3 Solve simple problems involving rounding off quantities to required number of decimal places	ten, hundred, thousand • Rounding off to the given decimal places (1, 2 and 3 decimal places) • Applying approximation in real life situations involving rounding off to required number of decimal places. • Relating approximation with measurements	quantities in real life • ***Application*** of rounding off in real life	approximating quantities • ***Team work*** through cooperative learning
6.7 RATIO AND PROPORTION	6.7.1 Describe ratio and direct proportion 6.7.2 Differentiate between ratio and direct proportion 6.7.3 Express a given ratio in its lowest term 6.7.4 Solve problems involving ratio and direct proportion.	• Describing ratio and direct proportion • Relating ratio and direct proportion with number patterns, relations and mappings. • Relationship between ratio and direct proportion • Reduction of ratio to lowest term • Unitary and proportional methods • Real life problems involving direct proportion (e.g. exchange rates, measures)	• ***Interpretation*** of the meaning of proportional parts • ***Computation*** of problems involving ratio and direct proportion • ***Application*** of ratio and proportion in solving real life problems	• ***Team work*** through cooperative learning • ***Accuracy*** in computations
6.8 SOCIAL AND COMMERCIAL ARITHMETIC	6.8.1 Describe cost price, selling price, profit and loss 6.8.2 Calculate cost price, selling price, profit and loss 6.8.3 Calculate simple interest, discount, and profit and loss percentage. 6.8.4 Carry out calculations	• Cost price (CP) and Selling price • Profit and loss • Calculations involving cost price, selling price, profit and loss in real life situations. • Time tabling in transportation, Fare chart (Bus, train, marine	• ***Computation*** of cost price, selling price, profit and loss, and simple interest • ***Application*** in transportation, entrepreneurship	• ***Teamwork*** and role-play in selling and buying. • ***Decision making*** in entrepreneurship. • ***Awareness*** of profit and lose in real life situations.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	involving transportation	and air) • Distance charts (ready reckoner)	and banks. • ***Interpretation*** of transportation charts.	
6.9 STATISTICS	6.9.1 Describe averages or measures of central tendency 6.9.2 Solve problems involving averages	• Averages or measures of central tendency (Mean, mode and median) • Problems involving averages	• ***Interpretation*** of measures of central tendency • ***Computation*** of average or mean. • ***Analysis*** of measures to find mode and median.	• ***Problem solving*** real life situations.
6.10 LINEAR EQUATIONS IN ONE VARIABLE	6.10.1 Describe an open sentences 6.10.2 Solve linear equations in one variable	• Open sentences • Linear equations in one variable • Applying linear equations in one variable in real life situations	• ***Interpretation*** of open sentences. • ***Representation*** of problems into linear equations in one variable. • ***Solving*** linear equations in one variable.	• ***Appreciation*** of linear equations in solving problems. • ***Accuracy*** in solving linear equations.
6.11 PLANE SHAPES	6.11.1 Identify regular polygons up to six sides 6.11.2 Draw pentagon and hexagon.	• Identifying regular polygons up to six sides. • Drawing pentagon and hexagon using set square, protractor and compass	• ***Identification*** of regular polygons up to six sides • ***Construction*** of pentagon and hexagon.	• ***Appreciation*** of constructing shapes. • ***Accuracy*** in constructing plane shapes.
6.12 MEASUREMENT	6.12.1 Find the total length of edges of cube and cuboid 6.12.2 Find the total surface area of cube and cuboid 6.12.3 Describe the meaning of	• Faces, vertices and edges of solids • Total length of edges of cube and cuboid	• ***Computation*** of total surface area of cube and cuboid. • ***Interpretation*** of	• ***Interest*** of calculations of surface area • ***Awareness*** of speed

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	speed 6.12.4 Calculate speed using distance and time	• Total surface area of cube and cuboid • Meaning of speed (at this level avoid use of average speed) • Calculating speed using distance and time • Calculating distance using speed and time • Calculating time using speed and distance (refer to the relationship between division and multiplication i.e. sxt = d or t = d÷ s or s = d÷ t)	speed. • ***Computation*** of speed using distance and time.	related to distance and time

GRADE 7

General Outcomes	Key Competences:
▪ Develop algebraic, geometry and arithmetic skills in mathematics. ▪ develop mathematical concepts on shapes and diagrams ▪ Solve mathematical challenges in everyday life through problem solving	▪ Convert numerals from Arabic to Roman numeration and vice versa ▪ Order both Arabic and Roman numerals in terms of magnitude ▪ Carry out combined operations observing the order of operations ▪ Apply factors and multiples to solve real life problems ▪ Add and subtract fractions with different denominators ▪ Solve problems involving length, capacity and mass ▪ Multiply fractions by whole numbers ▪ Divide whole numbers by fractions and vice versa ▪ Convert common fractions into decimals and vice versa ▪ Solve problems involving percentages ▪ Present data on a stem-leaf plot and on a bar graph

GRADE 7

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
7.1 FRACTIONS	7.1.1 Solve problems involving addition, subtraction, multiplication and division of fractions (as recap)	• Addition and subtraction of fractions • Multiplication and division of fractions • Practical problems involving four rules on fractions	• ***Application*** of fractions to practical problems	• ***Awareness*** of the four operations as they relate to fractions.
7.2 DECIMALS	7.2.1 Solve problems involving addition, subtraction, multiplication and division of decimal (as recap) 7.2.2 Convert common fractions to decimals and vice versa. 7.2.3 Order Fractions and decimals	• Addition, subtraction, multiplication and division of decimals up to 4 decimal places • Conversions of fractions to decimals and vice versa • Ordering vulgar and decimal fractions (either descending or ascending order) • Using the symbols (>, <, =) in comparing fractions	• ***Conversion*** from fractions to decimals. • ***Computation*** involving decimals • ***Ordering*** fractions and decimals	• ***Accuracy*** in operating on fractions • ***Appreciation*** of the relationship between decimals and common fractions
7.3 PERCENTAGES	7.3.1 Describe a percentage 7.3.2 Convert decimals to percentages and vice versa. 7.3.3 Convert common fractions to percentages and vice versa. 7.3.4 Solve problems involving percentages. 7.3.5 Relate fractions, decimals and percentages to real life situations	• Percentage (as fraction of hundred) • Converting decimals to percentages and vice versa • Conversion of common fractions to percentages and vice versa • Problems involving addition, subtraction, multiplication and division of percentages • Fractions, decimals and percentages in real life	• ***Computation*** of percentage, decimals and fractions • ***Application*** of percentage, decimals and fractions in real life • ***Conversion*** between fractions, percentages and decimals	• ***Awareness*** of importance of percentage, fractions and decimals in real life • ***Curiosity*** in working with percentages, decimals and fractions in real life • ***Team work***

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
				through cooperative learning
7.4 RATIO AND PROPORTION	7.4.1 Solve problems involving direct proportion (as recap) 7.4.2 Describe indirect proportion. 7.4.3 Solve problems involving indirect proportion 7.4.4 Draw graphs to illustrate quantities in direct and indirect proportion.	• direct proportion (as recap) • Describing indirect proportion • Indirect proportions using the fraction and proportional methods • Drawing graphs to illustrate quantities in direct and indirect proportion • Problems involving ratio and proportion in real life situation	• ***Interpretation*** of the meaning of indirect proportion • ***Computation*** of problems involving indirect proportion • ***Representation*** of quantities in indirect proportion • ***Application*** of direct and indirect proportion in solving real life problems	• ***Curiosity*** in the use of graphs • ***Team work*** through cooperative learning • ***Accuracy*** in computations
7.5 SOCIAL & COMMERCIAL ARITHMETIC	7.5.1 Conversion of currencies 7.5.2 Calculate the cost of goods priced in foreign currency.	• Buying and selling of foreign currency • Conversion of currencies (from local to foreign currency and vice versa).	• ***Computation*** of buying and selling of foreign currency. • ***Entrepreneurship*** involving cost of goods priced in foreign currency.	• ***Appreciation*** in conversions of currency. • Honest • ***Assertiveness*** in conversions of currency.
7.6 INTEGERS	7.6.1 Understand integers 7.6.2 Illustrate positive and negative numbers using the number line. 7.6.3 Order integers 7.6.4 Add integers 7.6.5 Subtract integers	• Understanding positive and negative numbers • Relating integers with addition and subtraction of whole numbers using number line. • Illustrating positive and negative numbers on the number line • Ordering integers	• **Representation** of integers on the number line. • ***Accuracy*** of addition and subtraction of integers.	• ***Appreciation*** of calculations using the number line • ***Awareness*** of ordering of integers.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
		• Addition of integers using the number line • Addition of integers without using the number line • Subtraction of integers using the number line • Subtraction of integers without using the number line • Relating Integers to real life situations (e.g. profit and loss, temperature)		
7.7 NUMBER BASES	7.7.1 Illustrate base ten numeration system 7.7.2 Describe other number bases 7.7.3 Convert from Base 10 to Bases 2, 5 and 8. 7.7.4 Convert from Bases 2 , 5 and 8 to Base 10. 7.7.5 Convert from base 2 to base 5 and vice versa 7.7.6 Add and subtract in Bases 2, 5 and 8.	• Base ten numeration (place values) • Numeration in other bases (2, 5 and 8) • Conversion from Base 10 to Bases 2, 5 and 8 and vice versa. • Conversion from base 2 to base 5 and vice versa. • Addition and subtraction of numbers in Bases 2, 5 and 8	• ***Representation*** of numbers to other numeration systems • ***Conversions*** of bases from one base to the other. • ***Addition*** and ***subtraction*** of number bases.	• ***Accuracy*** in conversions of bases. • ***Logical thinking*** in conversions.
7.8 NUMBER AND SEQUENCES	7.8.1 Describe perfect squares 7.8.2 Find squares of whole numbers 7.8.3 Describe cubes 7.8.4 Find cubes of whole numbers. 7.8.5 Generate a sequence in a decreasing and increasing order. 7.8.6 Generate series	• Square and squared whole numbers. • Cubes and Cubed whole numbers. • Triangular whole numbers • Identification of sequences. • Generating a rule from given sequence and vice versa • Generation of series (use ideas such as Fibonacci series).	• ***Identification*** of squared and cubed numbers • ***Computation*** of squared and cubed whole numbers. • ***Generation*** of sequence and series.	• Accuracy • ***Prediction*** of a series or sequence. • ***Appreciation*** of Fibonacci series.

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
7.9 INEQUATIONS	7.9.1 Describe an open sentence 7.9.2 Solve simple linear inequations in one variable.	• Open sentences • Simple linear inequations in one variable • Show the solutions on the number line.	• ***Representation*** of an open sentence. • ***Computation*** of simple linear inequations in one variable.	• ***Appreciation*** of linear equations. • ***Awareness*** of open sentences.
7.10 PLANE SHAPES	7.10.1 Describe line symmetry 7.10.2 Draw lines of symmetry of plane shape. 7.10.3 Establish the relationship between circumference and diameter	• Describing line symmetry through demonstration (paper folding) • Completing symmetrical shapes (folded along line of symmetry) • Drawing lines of symmetry of plane shape (e.g. square, rectangle, circle) • Establishing the relationship between circumference and diameter (using experiment with cylindrical objects) [constant pi ($\pi = 3.14$)]	• ***Identification*** of line of symmetry. • ***Interpretation of*** relationship between diameter and circumference.	• ***Curiosity*** of finding lines of symmetry. • ***Awareness*** of relationship between diameter and circumference. • ***Teamwork*** in finding relationship between diameter and circumference.
7.11 MEASUREMENT	7.11.1 Calculate circumference, using radius or diameter of the circle. 7.11.2 Calculate the area of a circle	• Circumference, using radius or diameter of the circle [constant pi ($\pi = 3.14$)]. • Establishing the formula for the area of circle (by demonstration) • Calculating the area of a circle [constant pi ($\pi = 3.14$)]	• ***Computation*** of circumference and area of circle.	• ***Curiosity*** in establishing the formula of area of circle.
7.12 SOLID SHAPES	7.12.1 Identify a cylinder and	• Identifying a cylinder and	• ***Identification*** of	• ***Curiosity*** if

TOPIC	SPECIFIC OUTCOMES	KNOWLEDGE	SKILLS	VALUES
	triangular prism 7.12.2 Draw nets of cylinder and triangular prism 7.12.3 Draw/sketch cylinder and triangular prism	triangular prism • Drawing of nets of cylinder and triangular prism • Draw/sketch cylinder and triangular prism	cylinder and triangular prism. • ***Drawing*** cylinders and prisms and their nets.	drawing nets of cylinders and prisms. • ***Appreciation*** of drawing of cylinders and prisms.
7.13 STATISTICS	7.13.1 Interpret data on charts (pie chart, line graph, bar/ line graph, frequency table) 7.13.2 Collect and present data on a pictograph, pie chart, bar chart, line graph and frequency tables. 7.13.3 Calculate Mean, Mode and Median 7.13.4 Calculate averages as applied to mass, money, time, temperature and speed.	• Data Interpretation • Data collection • Data presentation on pictograph, pie chart, bar chart, line graph and frequency tables presentation • Mean, Mode, Median as applied in real life situations • Averages as applied to mass, money, time, temperature and speed.	• ***Interpretation*** of data in a charts and graphs • ***Presentation*** of data in a charts and graphs. • C***omputation*** of Mean, Mode and Median.	• ***Accuracy*** in the computation of Mean, Mode and Median • ***Logical thinking*** in the application of averages in measures.

APPENDIX 1: GRADES 1 TO 7 SCOPE AND SEQUENCE

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
1.3 NUMBERS AND NOTATION	1.3.1 Recognise, count, read and write numbers from 1 to 100 (including the meaning of zero). 1.3.2 Interpret numbers using ten as a unit 1.3.3 Order numbers in terms of magnitude. 1.3.4 Count in tens up to ten tens (100).	2.2.1 Count, read and write numbers up to 1,000. 2.2.2 Count in tens and hundreds up to 1,000 2.2.3 Identify place values of digits in given numbers. 2.2.4 Write numbers in expande	3.2.1 Read and write numbers up to 1,000,000. 3.2.2 Express a number in expanded notation.	4.2.1 Read and write numbers up to 1,000,000,000 4.2.2 Express a number in expanded notation	5.2.1 Add whole numbers using the number line. 5.2.2 Apply addition using the number line to solve problems in real life situations.		

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		d notation.					
1.4 INDEX NOTATION	1.4.1					6.2.5 Describe index notation. 6.2.6 Change a number in index form to expanded notation and vice versa. 6.2.7 Evaluate numbers in index notation with positive bases and indices.	
1.5 SETS	1.5.1 Sort objects according to size, colour and shape. 1.5.2 Match	2.1.1 Describe sets in relation to real life situation	3.1.1 Describe a set by listing its members. 3.1.2 Recognise and use the symbols	4.1.4 Identify equivalent sets. 4.1.5 Identify subsets and use the subset symbol	5.5.1 List all sub sets of a given set. 5.5.2 Describe sets of numbers. 5.5.3 Describe subset in a Venn	6.2.8 Describe the intersection, union in a Venn diagram. 6.2.9 Use symbols	

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
	sets into one-to-one correspondence. 1.5.3 Place sets in order according to their cardinal numbers. 1.5.4 Assign numerals 0 to 10 to elements in a set. 1.5.5 Use cardinal and ordinal numbers in everyday life.	s. 2.1.2 State membership of a set using symbol ∈ , ∉ and { }	"=" equal to, " ≠" not equal to.	"⊂". 4.1.6 Apply sets to solve problems in real life situations	diagram.	of intersection "∩", union "U" (and subset "⊂" as recap). 6.2.10 Find number of subsets of a given set using the formula 2^n. 6.2.11 Apply the knowledge of sets in real life situations.	
1.5 ADDITION	1.5.1 Add whole numbers with sums up to 100.	2.3.1 Add whole numbers vertically	3.3.1 Add whole numbers with sums up to	4.3.2 Add whole numbers with sums up to			7.3.6

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
	1.5.2 Complete addition of number sentences. . 1.5.3 Apply addition to real life up to 100.	with sums up to 100 (including carrying) 2.3.2 Add whole numbers with sums up to 1,000. 2.3.3 Carry out addition of quantities in real life situations (e.g. money, quantities)	100,000. 3.3.2 Carry out addition of numbers in real life situations.	1,000,000. 4.3.2 Apply addition to solve problems in real life.			

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
1.6 3 FACTORS AND MULTIPLES	1.6.1			4.3.3	5.6.1 Identify factors of given numbers 5.6.2 Identify the Highest Common Factor (HCF) 5.6.3 Identify multiples of a given number 5.6.4 Identify the Lowest Common Multiple (LCM) by listing	6.3.1 Describe and list prime and composite numbers. 6.3.2 Identify prime factors of given numbers	7.3.7
1.7 FRACTIONS AND DECIMALS					5.7.1 Identify equivalent fractions by multiplying or dividing the same number	6.5.1 Describe decimal numbers by their names (up to 3 decimal places) 6.5.2 Add and	7.1.1 Solve problems involving addition, subtraction, multiplication and division

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
					with numerator and denominator 5.7.2 Express fractions with different denominators to the same denominator 5.7.3 Add and subtract proper, improper and mixed fractions with different denominators. 5.7.4 Apply knowledge of fractions to solve	subtract decimal numbers up to 3 decimal places 6.5.3 Multiply decimal numbers by decimal numbers 6.5.4 Divide decimal numbers by decimal numbers (up to 3 decimal places (INCLUDING REMAINDER)	of fractions (as recap)

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
					problems in real life situations		
							7.2.1 Solve problems involving addition, subtraction, multiplication and division of decimal (as recap) 7.2.4 Convert common fractions to decimals and vice versa. 7.2.5 Order Fractions and decimals
			3.8.1 Identify and represent	4.8.1 Describe equivalent fractions 4.8.2 Arrange	5.8.1 Relate common fractions	6.4.1 Multiply fractions by whole numbers	7.3.1 Describe a percentag

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
			proper fractions as equal parts of a whole. 3.8.2 Draw and shade proper fractions. 3.8.3 Add and subtract proper fractions with common denominator. 3.8.4 Apply proper fractions in real life situations	the common fractions either in ascending or descending order using proportion line 4.8.3 Identify and represent improper and mixed fractions 4.8.4 Convert mixed fractions to improper fractions and vice versa. 4.8.5 Add and subtract proper, improper	to decimals. 5.8.2 Describe decimal numbers by their names (up to 2 decimal places) 5.8.3 Add and subtract decimal numbers. 5.8.4 Multiply decimal numbers by whole numbers. 5.8.5 Divide decimal numbers by whole numbers (up to 2 decimal	6.6.4 Multiply a fraction by another fraction. 6.6.5 Divide fractions by whole numbers 6.6.6 Divide whole numbers by fractions 6.6.7 Divide a fraction by another fraction 6.6.8 Apply fractions to solve problems in real life	e 7.3.2 Convert decimals to percentages and vice versa. 7.3.8 Convert common fractions to percentages and vice versa. 7.3.9 Solve problems involving percentages. 7.3.10 Relate fractions, decimals and percentages to real life situations

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
				and mixed fractions with common denominators. 4.10.6 Apply improper fractions to solve problems in real life	places WITHOUT REMAINDER). 5.8.6 Apply decimals to solve problems in real life situations.		
1.8 SUBTRACTION	1.4.6 Subtract whole numbers up to 100. 1.4.7 Develop the concept of zero as a difference 1.4.8 Complete subtraction of number sentences 1.4.9 Apply addition to real life	2.4.1 Subtract whole numbers vertically up to 100 (including borrowing) 2.4.2 Subtract whole numbers vertically	3.4.1 Subtract whole numbers up to 100,000 3.4.2 Carry out subtraction and addition in real life situation.	4.4.3 Subtract whole numbers up to 1,000,000 4.4.4 Apply subtraction and addition to solve problems in real life.	5.3.1 Subtract whole numbers using a number line. 5.3.2 Apply subtraction and addition using the number line to solve problems		

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
	up to 100. 1.4.10 Carry out shopping activities involving money.	up to 1,000. 2.4.3 Carry out subtraction and addition in real life. 2.4.4 Carry out practical shopping and marketing activities involving money up to K 1, 000.			in real life situations.		
5.4 COMBINE					5.4.1 Perform combined operation		

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
1.9 D OPERATIONS					5.4.2 Apply the commutative, associative and distributive laws to four basic mathematical operations.		
1.5 NUMBER PATTERNS AND NUMBER SEQUENCES	1.5.2 Identify number patterns involving addition and subtraction up to 100	2.7.1 Recognize and use number patterns involving the four mathematical operations. 2.7.2 Determine the rule in the number pattern.	3.7.1 Order numbers using mathematical symbols ">", "<", "=" and "≠".	4.7.2 Identify patterns and complete number sequences.			7.8.7 Describe perfect squares 7.8.8 Find squares of whole numbers 7.8.9 Describe cubes 7.8.10 Find cubes of whole numbers. 7.8.11 Generate a sequence in a

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
							decreasing and increasing order. 7.8.12 Generate series
2.5 MULTIPLICATION		2.5.1 Express multiplication as repeated addition 2.5.2 Multiply single digit numbers 2.5.3 Memorize the multiplication table of single digit numbers	3.5.1 Multiply two and three digit numbers by a single digit number vertically. 3.5.2 Apply multiplication in real life situation.	4.5.5 Multiply numbers by 10, 100 and 1000 using short multiplication. 4.5.6 Multiply two and three by two digit numbers using vertical multiplication. 4.5.7 Apply the properties of zero (0) and one (1) in multiplication			

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		2.5.4 Use Multiplication vocabulary 2.5.5 Apply Multiplication in real life situations		4.5.8 Apply multiplication to solve problems in real life.			
DIVISION		2.6.1 Express division as repeated subtraction or sharing 2.6.2 Use division vocabulary 2.6.3 Divide numbers whose	3.6.1 Divide two and three digit numbers by single digit number using Long division (with remainders). 3.6.2 Demonstrate	4.7.3 Divide numbers by 10, 100 and 1000 using short division. 4.7.4 Divide two and three digit by two digit numbers using long division (with			

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		divisor and quotient are single digit. 2.6.4 Apply division in real life situations.	multiplication and division skills in real life situations.	remainders). 4.7.5 Apply division to solve problems in real life			
APPROXIMATIONS						6.6.1 Round off to the nearest unit. 6.6.9 Round off to the nearest decimal places 6.6.10 Solve simple problems involving rounding off quantities to	

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
						required number of decimal places	
1.6 PLANE SHAPES	1.7.1 Recognise squares, circles, rectangles and triangles. 1.7.2 Trace outline of squares, circles, rectangles and triangles. 1.7.3 Make pictures using shapes of squares, rectangle circles and triangles						
7.9 INTEGERS							7.6.1 Understand integers

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
							7.6.2 Illustrate positive and negative numbers using the number line. 7.6.3 Order integers 7.6.4 Add integers 7.6.5 Subtract integers
NUMBERS BASES							7.9.1 Illustrate base ten numeration system 7.9.2 Describe other number bases 7.9.3 Convert from Base 10 to Bases 2, 5 and 8. 7.9.4 Convert from Bases 2 ,

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
							5 and 8 to Base 10. 7.9.5 Convert from base 2 to base 5 and vice versa 7.9.6 Add and subtract in Bases 2, 5 and 8.
1.8 RATIO AND PROPORTION						6.7.5 Describe ratio and direct proportion 6.7.6 Differentiate between ratio and direct proportion 6.7.7 Express a given ratio in its lowest term 6.7.8 Solve problems involving ratio and direct proportion.	7.9.7 Solve problems involving direct proportion (as recap) 7.9.8 Describe indirect proportion. 7.9.9 Solve problems involving indirect proportion 7.9.10 Draw graphs to illustrate quantities

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
							in direct and indirect proportion.
1.9 ANGLES				4.9.1 Describe an angle. 4.9.2 Identify types of angles 4.9.3 Use a protractor to measure and draw angles up to 180°.			

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
1.10 SOCIAL AND COMMERCIAL ARITHMETIC					5.9.1 Prepare simple household bills (budgeting). 5.9.2 Apply simple ready-reckoners 5.9.3 Read and interpret water and electricity bills.	6.8.1 Describe cost price, selling price, profit and loss 6.8.2 Calculate cost price, selling price, profit and loss 6.8.5 Calculate simple interest, discount, and profit and loss percentage. 6.8.6 Carry out calculations involving transportation	7.9.11 Conversion of currencies 7.9.12 Calculate the cost of goods priced in foreign currency.
1.11 2.10 STATISTICS		2.10.1 Collect and present data using	3.10.1 Collect and present ungrouped data on a	4.13.3 Read and interpret line graphs 4.13.4 Collect and present	5.13.1 Understand stem-leaf plot and on a bar graph.	6.9.1 Describe averages or measures of central tendency 6.9.2 Solve	7.13.3 Interpret data on charts (pie chart, line graph, bar/ line

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		pictures	frequency table	data on a line graph	5.13.2 Collect and present data on a stem-leaf plot and on a bar graph	problems involving averages	graph, frequency table) 7.13.4 Collect and present data on a pictograph, pie chart, bar chart, line graph and frequency tables. 7.13.3 Calculate Mean, Mode and Median 7.13.4 Calculate averages as applied to mass, money, time, temperature and speed.
EQUATIONS AND						6.10.1 Describe an open	7.9.1 Describe an open

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
INEQUATIONS						sentences 6.12.5 Solve linear equations in one variable	sentence 7.9.2 Solve simple linear inequations in one variable.
PLANE SHAPES		2.11.1 Identify right angle with squared paper or paper folding. 2.11.2 Draw rectangle and square on squared paper. 2.11.3 Identify side and vertex of	3.12.1 Identify right angled triangle by folding rectangular and squared paper 3.12.2 Draw right angled triangle on squared paper	4.13.5 Draw a rectangle and square using protractor and set square 4.13.6 Identify isosceles and equilateral triangles 4.13.7 Draw the equilateral and isosceles triangles using protractor and set square	5.10.1 Identify and draw perpendicular and parallel lines 5.10.2 Describe trapezium, rhombus and parallelogram 5.10.3 Draw trapezium, rhombus and parallelogram. 5.10.4 Identify the uses of a pair of compasse	6.11.1 Identify regular polygons up to six sides 6.11.2 Draw pentagon and hexagon.	7.10.1 Describe line symmetry 7.10.2 Draw lines of symmetry of plane shape. 7.10.3 Establish the relationship between circumference and diameter

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		rectangle and square.			s 5.10.5 Use a pair of compass to draw a circle 5.10.6 Identify centre, diameter and radius of a circle		
SOLID SHAPES		2.12.1 Recognise cuboid, cube, cylinder and sphere. 2.12.2 Mould cuboid, cube, cylinder and sphere using			5.11.1 Identify face, vertex and edges of cuboids and cubes 5.11.2 Draw nets of cuboids and cubes 5.11.3Draw/sketch cuboid and cube		7.12.1 Identify a cylinder and triangular prism 7.12.2 Draw nets of cylinder and triangular prism 7.12.3 Draw/sketch cylinder and triangular prism

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		clay plasticine					
1.12 MEASURES AND MEASUREMETS	1.7.1 Identify times of the day. 1.7.2 Tell days of the week 1.7.3 Name months of the year 1.7.4 Compare lengths of different objects.	2.8.1 Read and tell time in full hours 2.8.2 Measures of different objects using standard units. (cm, mm, m) 2.8.3 Find the perimeter of simple plane figures	3.9.1 Tell time at specified intervals. 3.9.2 Read and use the calendar 3.9.3 Describe the unit for measuring long distances (Km). 3.9.4 Describe mass and the standard units for its measure 3.9.5 Describe capacity and the standard units for its	4.13.8 Determine duration of time elapsed between events 4.13.9 Relate seconds, minutes, hours and day. 4.13.10 Illustrate the meaning of area 4.13.11 Describe standard units to measure area. (cm^2, mm^2, m^2) 4.13.12 Derive the formulae for	5.12.1 Find the perimeter of triangle, parallelograms, trapezium, rhombus and composite shapes 5.12.9 Derive formula for area of triangle, parallelograms, trapezium and rhombus. 5.12.10 Calculate areas of triangle, parallelograms,	6.12.1 Find the total length of edges of cube and cuboid 6.12.6 Find the total surface area of cube and cuboid 6.12.7 Describe the meaning of speed 6.12.8 Calculate speed using distance and time	7.11.1 Calculate circumference, using radius or diameter of the circle. 7.11.2 Calculate the area of a circle

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
			measure	finding area of rectangle and square 4.13.13 Find the area of a rectangle and square	trapezium, rhombus and composite shapes 5.12.11 Describe volume 5.12.12 Use standard units to measure volume (cm^3, m^3) 5.12.13 Relate volume to capacity 5.12.14 Derive the formulae for finding volume 5.12.15 Calculate the volume of cubes and cuboids		
1.13 RELATIONS AND MAPPINGS		2.9.1 Draw arrow	3.11.1 Draw Arrow diagrams	4.13.14 Illustrate one-to-many	5.14.1 Illustrate a one-to-many and	6.12.9	

SPECIFIC OUTCOMES							
TOPIC	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**	**GRADE 5**	**GRADE 6**	**GRADE 7**
		diagrams to illustrate matching	to illustrate one-to-one mappings	relation using arrow. 4.12.2 Apply relations in real life situations.	many-to-one relations 5.14.2 Apply knowledge of relations and mappings in real life situations.		