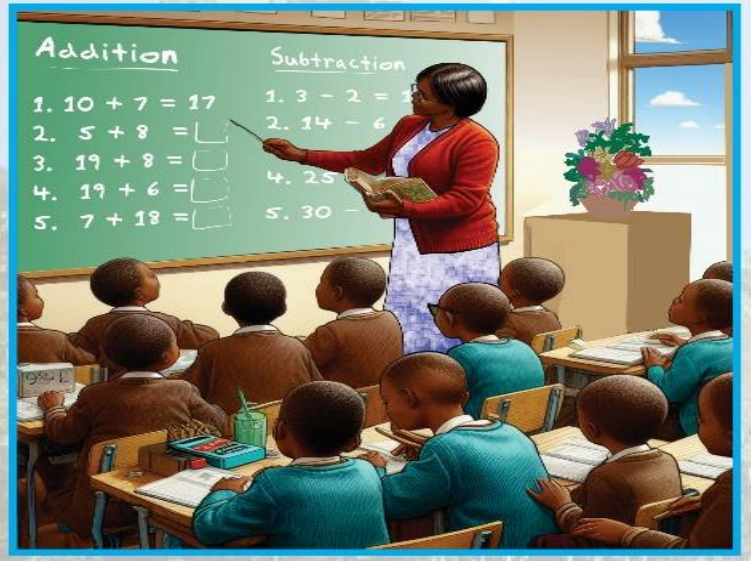
ZIMBABWE

**Ministry of Primary and Secondary Education**




# JUNIOR MATHEMATICS

## SYLLABUS

2024 -2030

**GRADE 3 - 7**

Curriculum Development and Technical Services
Box MP 133
Mt Pleasant
Harare



atics Syllabus MoPSE 2024

## Table of Contents

## ACKNOWLEDGEMENTS

The Ministry of Primary and Secondary Education wishes to acknowledge the following for their valued contribution in the production of the syllabus:

- The Junior Mathematics Syllabus Panel
- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development (MoHTEISTD)
- The Zimbabwe School Examinations Council (ZIMSEC)
- United Nations Children's Fund (UNICEF)
- United Nations Educational Scientific and Cultural Organisation (UNESCO)

# 1 PREAMBLE

## 1.1 Introduction

The Heritage-Based Junior Mathematics syllabus builds from the Infant Mathematics module. The document covers one of the six learning areas in the Junior School Module. This syllabus intends to foster mathematical knowledge through practical activities such as ordering, measuring, identifying, classifying, routine manipulation, application and problem solving. This learning phase seeks to give learners an appreciation of Mathematics as a learning area in their education and to equip them with Heritage-based life skills. The syllabus is also designed to enable a smooth transition from Junior to Secondary school learning. The learners will be assessed through both School Based Continuous Assessment (SBCA) and Summative Assessment (SA).

## 1.2 Rationale

This syllabus is designed to enable the learners to understand and apply mathematical concepts in both modern and Indigenous Knowledge Systems (IKS) as they are central to most facets of everyday life and enterprise skills. The learning area cuts across many fields of endeavor and this will help the learners to be versatile in the production of goods and services. The syllabus promotes critical thinking and problem - solving skills, which are key to innovativeness, entrepreneurship and industrialisation.

## 1.3 Summary of content

The Heritage-Based Mathematics syllabus is designed to cover five years of Junior Education, forming a firm foundation for the lower Secondary school Module (Forms 1 - 4). The learners will be exposed to mathematical language through ordering, measuring, identifying, classifying, routine manipulation, application and problem solving. The syllabus will enable learners to manipulate objects and interact with both the local and global environments for sustainable development. Topics to be covered are: Number, Operations, Measures and Relationships.

## 1.4 Assumptions

It is assumed that the learners:

- have numeracy and literacy skills;
- appreciate relationships and collaboration
- participate in team work
- think critically and logically
- have prior knowledge of IKS
- have prior knowledge of Information and Communication Technology (ICT)

## 1.5 Cross-cutting themes

Mathematics learning will encompass and have a universal thrust on the following cross-cutting themes:

- Health and well being
- Climate Change
- ICT
- Business Enterprise Skills
- Children's Rights and Responsibilities
- Gender stereotyping
- Environmental Management
- Disaster Risk Management

## 2 PRESENTATION OF THE SYLLABUS

The Junior Heritage-Based Mathematics syllabus is a single document. It constitutes: Preamble, Aims, Objectives, Topics, Scope and Sequence, Competency Matrix and Assessment. The scope and sequence show the progression of topics from Grade 3 to 7. The Competency Matrix shows the breadth and depth of content to be covered. Inclusive in this syllabus, is a suggested list of resources which can be used during the teaching and learning.

## 3 AIMS

The Junior Mathematics syllabus aims to:

- develop a positive attitude towards Mathematics
- foster problem-solving skills into learners

- communicate mathematical information to develop critical thinking and logical reasoning
- develop mathematical concepts and skills for use in entrepreneurship and other facets of life
- develop psycho-social skills such as self-control and free expression of emotions which contribute to the development of the learner
- develop an awareness of national heritage in the learning of Mathematics
- promote an awareness of IKS in the teaching and learning of Mathematics

# 4 SYLLABUS OBJECTIVES

Pupils should be able to:

- recall mathematical terms
- recognise mathematical terms
- use mathematical terms, symbols and language
- estimate quantities and measures to a degree of accuracy
- calculate to the given degree of accuracy
- solve mathematical problems

- demonstrate problem solving abilities in Mathematics
- apply mathematical concepts, skills and techniques in context
- explore mathematical ideas and come up with conclusions
- interpret ready reckoners, tables, pie charts and graphs
- analyse tables, charts, graphs and use them in conducting simple investigations
- incorporate Indigenous Knowledge System (IKS) in the teaching and learning of Mathematics

# 5 METHODOLOGY AND TIME ALLOCATION

## 5.1 Methodology

The syllabus is based on learner-centred approaches in the teaching and learning of Junior learners. The emphasis is on adopting methods that will enable pupils to acquire competencies in the physical, social, emotional and cognitive domains using tangible and intangible heritage. It promotes self-confidence, ethics, *Unhu/Ubuntu/Vumunhu* and children's rights and responsibilities among others. The recommended methodologies are designed to promote and lay a firm foundation for problem solving and critical thinking in life. The learners should be allowed to develop their own solutions while the teacher facilitates. The pace of learning will be

determined by the individual learner's content mastery. The use of Information and Communication Technology (ICT) is recommended as a problem-solving tool.

The following are some suggested teaching and learning methods:

5.1.1 Discovery

5.1.2. Experimentation

5.1.3 Group work

5.1.4 Projects

5.1.5 Songs and dances

5.1.6 Poems and rhymes

5.1.7 Question and answer

5.1.8 Excursions

5.1.9 Discussion

5.1.10 Research

5.1.11 Dramatisation

5.1.12 Demonstration

5.1.13 Exploration

5.1.14 Games

5.1.15 Role play

5.1.16 Simulation

### 5.2 Time allocation

It is recommended that Mathematics be allocated at least 3 hours per week for Grades 3 to 7. This will be 6 periods of 30 minutes each per week.

## 6 SYLLABUS TOPICS

The following are syllabus topics for Junior school module in Mathematics:

- Number
- Operations
- Measures
- Relationships

# 7 SCOPE AND SEQUENCE

## 7.1 TOPIC 1: NUMBER

| GRADE 3 | GRADE 4 | Grade 5 | Grade 6 | Grade 7 |
|---|---|---|---|---|
| • Numerals (0 to 1 000) | • Numerals (0 to 10 000) | • Numerals (0 to 100 000) | • Numerals (0 to 1 000 000) | • Numerals (0 to 10 000 000) |
| • Numbers in Words (zero to one thousand) | • Numbers in Words (zero to ten thousand) | • Numbers in words (zero to one hundred thousand) | • Numbers in words (zero to one million) | • Numbers in words (zero to ten million) |
| • Number notation (0 -1 000) | • Number notation (0 -10 000) | • Number notation (0 -100 000) | • Number notation (0-1 000 000) | • Number notation (0- 10 000 000) |
| • Place value of digits (0 to 1000) | • Place value of digits (0 to 10 000) | • Place value of digits (0 to 100 000) | • Place value of digits (0 to 1 000 000) | • Place value of digits (0 to 10 000 000) |
| • Ordinal numbers from first to thirtieth | • Ordinal numbers from first to hundredth | • Ordinal numbers from first to hundredth | Ordinal numbers from first to hundredth | Ordinal numbers from first to hundredth |
| • Number sequence (0 to 1 000) | • Number sequence (0 to 10 000) | • Number sequence (0 -100 000) | • Number sequence (0 -1 000 000) | • Number sequence (0 -10 000 000) |
| • Approximation (nearest 10 and 100) | • Approximation (nearest 10, 100, and 1 000) | • Approximation/ Estimation (nearest 10, 100, 1000, and 10 000) | • Approximation/ Estimation (nearest 10, 100, 1000, 10 000 and 100 000) | • Approximation/ Estimation (nearest 10, 100, 1000, 10 000, 100 000 and 1 000 000) |
| • Comparison of numbers (0 – 1 000) | • Comparison of numbers (0 – 10 000) | • Comparison of numbers (0 – 100 000) | • Comparison of numbers (0 – 1 000 000) | • Comparison of numbers (0 – 10 000 000) |
| • Estimation (0 to 1 000) | • Estimation (0 to 10 000) | | | |
| | | | • Prime numbers (0 -50) | • Prime numbers (0 - 100) |
| • Numeration system (Arabic: 1-10 and | • Numeration system (Arabic: 1-20 and | • Numeration system (Arabic: 1-20 and | • Numeration system (Arabic: 1-50 and | • Numeration system (Arabic: 1-50 and |

| | | | | |
|---|---|---|---|---|
| Roman numerals: I to X) | Roman Numerals: I to XX or vice versa) | Roman Numerals: I to XX or vice versa) | Roman Numerals: I to L or vice versa) | Roman Numerals: I to L or vice versa) |
| • Proper fractions (denominators 2, 4, 5 and 10) | • Proper fractions (denominators 2,4,5, 10 and 20 | • Proper fractions (denominators 2 to 10 and 20) | • Proper fractions (where denominators are 2 to 10 and multiples of 5 up to 50) | • Proper fractions (where denominators are 2 to 10 and multiples of 5 up to 1 00) |
| | • Mixed numbers (where denominators are 2, 4, 5, 10) | • Mixed numbers (where denominators are 2 to 10) | • Mixed numbers (where denominators are 2 to 10) | • Mixed numbers (where denominators are 2 to 10) |
| | • Decimals (up to 1 decimal place) | • Decimals (up to 2 decimal places) | • Decimals (up to 3 decimal places) | • Decimals (up to 3 decimal places) |
| | • Rounding off decimals to the nearest unit/whole number | • Rounding off decimals to the nearest unit/whole number and 1 decimal place | • Rounding off decimals to 2 decimal places | • Rounding off decimals to 2 decimal places |
| | • Percentages | • Percentages | • Percentages | • Percentages |

## 7.2 TOPIC 2: OPERATIONS

| GRADE 3 | GRADE 4 | GRADE 5 | GRADE 6 | GRADE 7 |
|---|---|---|---|---|
| • Addition of whole numbers whose sum is less than or equal to 1 000 | • Addition of whole numbers whose sum is less than or equal to 10 000 | • Addition of whole numbers whose sum is less than or equal to 100 000 | • Addition of whole numbers whose sum is less than or equal to 1 000 000 | • Addition of whole numbers whose sum is less than or equal to 10 000 000 |
| • Subtraction of whole numbers (0 to 1 000) | • Subtraction of whole numbers (0 to 10 000) | • Subtraction of whole numbers (0 to 100 000) | • Subtraction of whole numbers (0 to 1 000 000) | • Subtraction of whole numbers (0 to 10 000 000) |
| • Multiplication of whole numbers (whose product is 0 to 500, where the multiplier is a one-digit number) | • Multiplication of whole numbers (Whose product is less than 1 000) | • Multiplication of whole numbers (whose product is less than 5 000) | • Multiplication of whole numbers (whose product is less than 10 000) | • Multiplication of whole numbers (whose product is less or equal to 100 000) |
| • Division of whole numbers 1 to 100 by a one-digit number | • Division of whole numbers by one digit number 1 to 1 000 | • Division of whole numbers by two-digit numbers multiples of 10 up to100 and multiples of 100 up to 1000 | • Division of whole numbers whose dividend is less or equal to 10 000 | • Division of whole numbers whose dividend is less or equal to 100 000 |
| • Multiplication of whole numbers by fractions with denominators 2, 4, 5 and 10 | • Multiplication of proper fractions with denominators 2, 4, 5 and 10 | • Multiplication of proper fractions with denominators from 2 to 10 | • Multiplication of proper fractions with denominators from 2 to 10 | • Multiplication of two proper fractions with denominators from 2 to 10 |

| | | | | |
|---|---|---|---|---|
| | | | | • Multiplication of two mixed numbers with denominators 2 to 10 |
| | • HCF of two numbers (where the HCF is less than 10)<br>• LCM of two numbers (where the LCM is less than 50) | • HCF of two numbers (where the HCF is less than 10)<br>• LCM of two numbers (where the LCM is less than 50) | • HCF of two numbers (where the HCF is less than 20)<br>• LCM of two numbers (where the LCM is less than 100) | • HCF of two numbers (where the HCF is less than 20)<br>• LCM of two numbers (where the LCM is less than 100) |
| • Addition of proper fractions with the same denominators of 2, 4, 5 and 10 | • Addition of up to 3 proper fractions (where denominators are the same: 2,4,5, 10 and 20) | • Addition of (up to 3) proper fractions with same denominators from 2 to 10 and 20<br>• Addition of (up to 2) proper fractions with different denominators from 2 to 10 and 20 | • Addition of proper fractions with same or different denominators of 2 to 10 and multiples of 5 up to 50 | • Addition of proper fractions with denominators of 2 to 10 and multiples of 5 up to 100<br>• Addition of mixed numbers with denominators of 2 to 10 |
| • Subtraction of proper fractions (two fractions with the same denominators 2, 4, 5 and 10) | • Subtraction of proper fractions (where denominators are the same: 2,4,5, 10 and 20) | • Subtraction of proper fractions (with same or different denominators from 2 to 10 and 20) | • Subtraction of proper fractions with same or different denominators of 2 to 10 and multiples of 5 up to 50 | • Subtraction of proper fractions with denominators of 2 to 10 and multiples of 5 up to 100<br>• Subtraction of mixed numbers |

| | | | | |
|---|---|---|---|---|
| | | | | with denominators of 2 to 10 |
| | • Addition of decimals (up to 1 decimal place) | • Addition of decimals (up to 2 decimal places) | • Addition of decimals (up to 3 decimal places) | • Addition of decimals (up to 3 decimal places) |
| | • Subtraction of decimals (up to 1 decimal place) | • Subtraction of decimals (up to 2 decimal places) | • Subtraction of decimals (up to 3 decimal places) | • Subtraction of decimals ( up to 3 decimal places) |
| | | • Multiplication of decimal numbers by 1-digit whole numbers | • Multiplication of decimals (up to 2 decimal places) | • Multiplication of decimals (up to 3 decimal places) |
| | | • Division of decimal numbers by 1- or 2-digit whole numbers | • Division of decimal numbers by decimals up to 2 decimal places | • Division of decimal numbers by decimals up to 3 decimal places |
| | | | • Combined operations (up to 2 operations) | • Combined operations (up to 3 operations) |

## 7.3 TOPIC 3 MEASURES

| GRADE 3 | GRADE 4 | GRADE 5 | GRADE 6 | GRADE 7 |
|---|---|---|---|---|
| • Money (up to $10,00)<br>- Conversions<br>- Change | • Money (up to $50,00)<br>- Conversions<br>- Change | • Money (up to $100,00)<br>- Conversions<br>- Change | • Money (up to $200,00)<br>- Conversions<br>- Financial transactions | • Money (up to $500,00)<br>- Conversions<br>- Financial transactions |
| • Time<br>- hourly, half hourly and quarter hourly<br>- Days of the week and months of the year<br>- Seasons of the year<br>- Conversions of time (hours to days, days to hours, days to months) | • Time<br>- Time units<br>- Approximation of time.<br>- Application of time (am, pm, weekly, fortnightly and monthly)<br>- Conversions of time (minutes to hours, days to weeks, days to fortnights, weeks to months) | • Time<br>- Time units<br>- Approximation of time.<br>- Application of time (am, pm, weekly, fortnightly and monthly)<br>- Conversions of time (minutes to hours, days to weeks, days to fortnights, weeks to months, months to years, decades) | • Time<br>- Time units<br>- 12 hours and 24-hour notation (digital clock) | • Time<br>- Operations on time 24 hour and 12-hour notation (digital clock) |
| • Mass: standard measures (100g, 200g, 500g, 1kg) | • Mass: units and conversion of mass up to 10kg. | • Mass: units and conversion of mass up to 100kg | • Mass: units and conversion of mass up to 1 000kg (tonne) | • Mass: units and conversion of mass up to 1 000kg (tonne) |
| • Length (up to 10m) | • Length (0 to 30cm and 1m to 100m) | • Length: (standard and non-standard units (0 to 30cm and 1m to 100m) | • Length: (standard and non-standard units up to 1 000m) | • Length: standard units up to a kilometre |
| • Shapes:<br>- Plane | • Shapes: plane and solid | • Shapes: plane and solid | • Shapes: symmetry | • Shapes: 2 and 3 dimensional |

| | | | | |
|---|---|---|---|---|
| -Solid | | • Polygons up to 5 sides | • Geometrical parts of a circle<br>• Polygons up to 10 sides | • Arc and chord of a circle<br>• Polygons up to 10 sides |
| • Perimeter (square, rectangle, triangle) | • Perimeter (up to 4 sides) | • Perimeter (up to 5 sides) | • Perimeter (up to 10 sides) | • Perimeter of plane shapes (up to 10 sides) |
| | • Rate: Relating two measures | • Rate: Relating two quantities | • Rate: linking two quantities, use of the formula $s = \frac{D}{T}$ | • Rate: Distance, speed and time |
| • Area: non-standard measures and standard measures in $cm^2$ | • Area: rectangle, square and right-angled triangle | • Area: standard and non -standard units (rectangle, square and triangle) | • Area: rectangle, square, triangle and composite shapes | • Area: rectangle, square, triangle, combined and irregular shapes (units of area up to a hectare) |
| • Volume and capacity: half litre (500ml) and 1 litre (1000ml). | • Volume and capacity: Conversion of units | • Volume and capacity: cube and cuboid | • Volume and capacity: regular and irregular shapes | • Volume and capacity: up to a cubic metre |
| • Direction, angles and lines (4 cardinal points) | • Direction, angles and lines (4 cardinal points)<br>• Revolution | • Direction (8 cardinal points), angles and lines<br>• Revolution | • Direction, angles and lines<br>• Cardinal points<br>• Revolution | • Direction, angles and lines: including acute, obtuse, right, straight, reflex angles and complete revolution |

### 7.4 TOPIC 4: RELATIONSHIPS

| GRADE 3 | GRADE 4 | GRADE 5 | GRADE 6 | GRADE 7 |
|---|---|---|---|---|
| • Data handling<br>- Tables<br>- Bar graphs<br>- Tally system | • Data handling<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Pie charts | • Data handling<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Ready reckoners<br>- Pie charts<br>- Pictographs | • Data handling<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Ready reckoners<br>- Pie charts<br>- Pictographs | • Data handling<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Ready reckoners<br>- Pie charts<br>- Jagged line graphs |

## 8 COMPETENCY MATRIX

### 8.1 (GRADE 3) TOPIC 1: NUMBER (0 to 1 000)

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| **Whole numbers**<br>Numerals | • read/sign number in numerals<br>• write number in numerals | • Numerals. | • Expressing numbers in numerals.<br>• Writing numerals in words | • Number lines<br>• Number strips |

| | | | | |
|---|---|---|---|---|
| Words | • read/sign numbers in words<br>• write given numbers in words | • Number in words. | • Reading/signing in words.<br>• Writing in words. | • Number strips. |
| Place value of digits | • identify the place value of each digit in two- or three-digit numbers<br>• compare the place value of digits in different places within a number or on different numbers | • Place value | • Providing /use of place value charts activities<br>• Determining place value of a digit in a number | • Charts<br>• Abacus<br>• Counters for place value<br>• Strips with numbers |
| Number notation | • expand numbers. | • Number notation. | • Expressing numbers in expanded notation and vice-versa for example:<br>546 = 500+40+6:<br>200+30+7 = 237 | • Abacuses<br>• Place value charts |
| Ordinal numbers from first to thirtieth | • write ordinal numbers up to 30<br>• use ordinal numbers in ranking and positioning<br>• write ordinal numbers in words and numerals | • Ordinal numbers from first to thirtieth | • Writing ordinal numbers up to 30<br>• Arranging and telling positions of objects and pictures according to some order<br>• Writing ordinal numbers denoting positions | • Sets of objects<br>• Number line charts<br>• Vocabulary chart<br>• Flash cards |
| Comparison of numbers | • arrange sets of numbers in ascending and descending order<br>• compare any two numbers using: >, <, = | • Quantifying 0-1 000<br>• Comparisons >, <, = | • Ordering numbers from Lowest to highest or vice versa<br>• Comparing any two numbers using >, <, = | • Number line charts<br>• Class inventories<br>• Registers |
| Number sequence | • establish patterns of various number sequences<br>• complete the number sequences given<br>• create their own number sequences | • Patterns in number sequence | • Describing the patterns of various number sequences, showing whether they are increasing or decreasing. | • Flash cards<br>• Number line<br>• Blocks<br>• Bingo cards |

| | | | | |
|---|---|---|---|---|
| | | | • Filling in missing numbers to complete sequences<br>• Creating sequences | |
| Approximation | • round off numbers to the nearest 10 and 100 | • Nearest 10 and 100 | • Approximating numbers to the nearest 10 and 100 | • Place value cards<br>• Abacus<br>• Number line |
| Numeration system | • convert Roman numerals to Arabic and vice versa in the range I to X | • Arabic and Roman numerals (I to X) | • Reading and writing numbers in Arabic and Roman numerals<br>• Converting Roman numerals to Arabic numerals and vice versa in the range I to X<br>• Reading numbers in indigenous language from 1 to 10 | • Charts with Arabic and Roman numerals<br>• Flash cards<br>• Charts with indigenous numerals |
| Proper fractions | • write fractions in numerals<br>• name fractions shaded in diagrams<br>• compare fractions with the same denominators. | • Proper fractions with denominators 2 to 10 and 20 | • Reading and writing fractions in numerals.<br>• Interpreting diagrammatic representations of fractions.<br>• Compare fractions with the same denominators. | • Fraction charts<br>• Diagrams representing fractions<br>• Set pictures |

## 8.2 (GRADE 3) TOPIC 2: OPERATIONS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Addition of whole numbers | • add whole numbers without carrying<br>• add numbers which require carrying once<br>• demonstrate the commutative law in addition | • Addition of whole numbers whose sum is less than or equal to 1 000 | • Summing up two whole numbers which do not involve carrying for example<br>462 + 27 = 489<br>• Summing up two numbers which require carrying once, for example 27 + 14 =41<br>• Working out problems involving the commutative law<br>• Commutative<br>24 + 13=<br>13 + 24<br>• **NB: teachers should not teach the term commutative law**<br>• Using indigenous games in addition of whole numbers<br>• **N.B Addition terms such as Total, Sum of and altogether must be used.** | • Abacuses<br>• Work cards<br>• Number lines<br>• Counters |
| Subtraction of whole numbers | • subtract numbers<br>• subtract numbers with one equal addition | • Subtraction of whole numbers (0 – 1 000) | • Reinforcing basic subtraction facts through mental work<br>• Subtracting numbers | • Abacuses<br>• Work cards<br>• Flash cards |

| | | | | |
|---|---|---|---|---|
| | | | • Decreasing numbers with one equal addition<br>• 455 346<br>- 129 - 172<br>• Using indigenous games for subtraction | |
| Addition of proper fractions | • add two proper fractions with the same denominators | • Addition of two proper fractions with the same denominators 2, 4, 5 and 10 | • Adding proper fractions with the same denominators | • Fraction strips<br>• Diagrams<br>• Charts<br>• Counters |
| Subtraction of proper fractions | • subtract proper fractions with the same denominators | • Subtraction of two proper fractions with the same denominators 2, 4, 5 and 10 | • Subtracting proper fractions with the same denominators | • Fraction strips<br>• Diagrams<br>• Charts<br>• Work cards<br>• Counters |
| Multiplication of whole numbers | • demonstrate that multiplication is repeated addition.<br>• multiply whole numbers by one digit multiplier without carrying.<br>• identify factors of numbers within the range of 0 to100. | • Multiplication of numbers whose product is 0 to 500 where the multiplier is a one-digit number.<br>• Factors. | • Using the multiplication sign in repeated addition such as 3 + 3 +3=3(3) 3x3=9<br>• Multiplying whole numbers by one digit multiplier without carrying such as 221 X 2<br>• Finding factors of numbers within the range of 0-100. | • Work cards<br>• Flash cards<br>• Smart phones<br>• Calculators<br>• Counters |

| | | | | |
|---|---|---|---|---|
| | | | • Constructing multiplication tables up to 10. | |
| Division of whole numbers | • share equally without a remainder<br>• divide by one-digit divisors using repeated subtraction | • Division of whole numbers by a one-digit divisor (1 to 100) | • Demonstrating division by sharing equally without a remainder<br>• Using a number line to demonstrate division as repeated subtraction | • Number line<br>• Counters<br>• Work cards<br>• Flash cards |
| Multiplication of whole numbers by fractions | • multiply a whole number by a proper fraction | • Multiplication of whole numbers by proper fractions with denominators 2, 4, 5 and 10 | • Illustrating multiplication of whole numbers by proper fractions | • Fraction charts<br>• Regular diagrams such as rectangles and squares<br>• Counters. |

## 8.3 (GRADE 3) TOPIC 3: MEASURES

| **SUB TOPIC** | **OBJECTIVES**<br>Pupils should be able to: | **CONTENT**<br>(knowledge, skills, values and attitudes) | **SUGGESTED NOTES AND ACTIVITIES** | **SUGGESTED RESOURCES** |
|---|---|---|---|---|
| Money | • identify currency up to $10.00<br>• describe features on coins and notes<br>• calculate composition of amounts in terms of smaller notes and coins | • Currency up to $10.00<br>• Money denominations | • Identifying coins and notes in use in Zimbabwe<br>• Identifying currency which was used in the past<br>• Reading inscriptions on coins and notes | • Real coins and notes<br>• Paper money<br>• Ready reckoners |

| | | | | |
|---|---|---|---|---|
| | | | • Describing the heritage features on Zimbabwean coins and notes<br>• Reading ready reckoners and tables on money<br>• Breaking down amounts into smaller denominations such as $10.00 ={$5.00; $2.00; $2.00;$1.00} | |
| Conversions of money | • convert cents to dollars and vice-versa | • Conversions of money | • Expressing cents in dollars and vice-versa | • Conversion tables |
| Change | • calculate change in buying and selling | • Buying and selling | • Buying and selling exercises using the shop corner in the classroom to enhance financial literacy and enterprise<br>• Barter trade exercise to enhance financial literacy and enterprise<br>• Visiting shops to understand the value embedded on the shop items.<br>**NB: At this level consider only whole number prices for change purposes**. | • Shop items<br>• Adverts of prices in newspapers<br>• Calculators |
| Time | • tell time up to the hour, half hour and quarter hour | • Time telling: hourly, half hourly and quarter hourly | • Telling time using the cock-crow, position of the sun, phases of the moon<br>• Showing time on clock faces<br>• Reading time on clock faces by the hour, half hour and quarter hour | • Clock faces<br>• Scissors and manila |
| | • identify days of the week, seasons and months of the year | • Days of the week, months of the year and seasons | • Stating days of the week, months of the year and seasons in relation to the national events such as Independence, Heroes and sacred days<br>• Changing hours to days, days to weeks, weeks to months, months to years and vice-versa | • Calendars |

| | | | | |
|---|---|---|---|---|
| | • identify seasons of the year<br>• write seasons of the year | • Seasons of the year | • Listing months of the year<br>• Classifying months into seasons<br>• Using the shedding of trees, the sound of a water coo to signify seasons<br>• Listing activities for various seasons | • Pictures<br>• Calendar<br>• Charts |
| | • convert hours to days<br>• convert days to hours<br>• convert days to weeks<br>• convert weeks to days | • Conversions of time | • Converting various time periods<br>• Naming months of the year | • Calendars<br>• Clocks<br>• Clock faces |
| Mass | • find mass of objects using weights<br>• compare mass of objects using weights | • Standard measure (100g, 200g, 500g, 1kg) | • Estimating mass of objects using more or less than a kilogram<br>• Weighing objects using 1kilogram and half kilogram weights | • Scales<br>• Weights<br>• Various objects |
| Length | • measure length of objects accurately<br>• measure the length of lines accurately | • Length up to 10 metres | • Estimating length of objects<br>• Measuring accurately the length of objects in metres<br>• Measuring the length of given lines in centimetres | • Metre rules<br>• Standard 30-centimetre rules<br>• Various objects |
| Shapes | • classify shapes<br>• name polygons with sides up to four | • Plane shapes<br>• Solid shapes | • Identifying shapes as plane and solid<br>• Naming and drawing the following plane shapes: triangle, rectangle, square and circle<br>• Naming solid shapes<br>• Visiting heritage sites and identifying different shapes | • Models of plane shapes<br>• Solid shapes<br>• ICT tools<br>• Pictures of shapes<br>• 3D geographical shapes<br>• Tactile diagram kits |
| Perimeter | • calculate the perimeter of square, rectangle and triangle | • Perimeter (square, rectangle, triangle) | • Finding perimeter of shapes by measuring | • Metre sticks<br>• Metre rulers<br>• Strings<br>• Tape measures<br>• 30 cm rulers<br>• Click wheels |

| | | | | |
|---|---|---|---|---|
| | | | | • 3D geographical shapes<br>• Tactile diagram kits |
| Area | • estimate the area of a square and rectangle using non-standard units<br>• calculate area of a square, rectangle | • Non-standard measures<br>• Standard measures in $cm^2$<br>• Area of a rectangle and square | • Estimating area of square, rectangle by counting squares.<br>• Finding area of a square and rectangle using formulae.<br>• Solving life problems involving area. | • Metre rulers<br>• Metre stick<br>• Charts with shapes<br>• Tape measures<br>• ICT tools |
| Volume and capacity | • find the volume of liquids using half litre and 1 litre containers | • Volume and capacity half litre and 1 litre containers | • Estimating the volume using half and 1 litre containers | • Containers of various capacity<br>• Clean water |
| Direction, angles and lines | • name the four main cardinal points<br>• identify the position of an object<br>• identify horizontal and vertical lines<br>• illustrate quarter and half revolution | • Four cardinal points<br>• Lines and angles<br>• Revolution | • Identifying the four cardinal points<br>• Using cardinal points to identify the position of objects<br>• Sketching horizontal and vertical lines<br>• Showing quarter and half revolution<br>• Discussing things and places located in the four cardinal points in relation to the local environment | • Compasses<br>• Diagrams showing directions<br>• Compass points<br>• Charts with angles<br>• Computers |

## 8.4 (GRADE 3) TOPIC 4: RELATIONSHIPS

| **SUB TOPIC** | **OBJECTIVES**<br>Pupils should be able to: | **CONTENT**<br>(knowledge, skills, values and attitudes) | **SUGGESTED NOTES AND ACTIVITIES** | **SUGGESTED RESOURCES** |
|---|---|---|---|---|
| Data handling | • collect data from their environment<br>• represent information using tally system | • Data collection<br>• Tally system | • Gathering data<br>• Conducting simple investigations and gathering data within the classroom and the environment such as ages, | • Timetables<br>• Newspaper cuttings of tables<br>• Calendars |

| | | | | |
|---|---|---|---|---|
| | | | trees, shoe sizes, months of births<br>• Showing data using tally system<br>• Recording data collected | • Charts with graphs |
| | • interpret information from tables | • Tables | • Interpreting information from tables<br>• Solving problems using tables | |
| | • interpret information from bar graphs | • Bar graphs | • Reading information from bar graphs<br>• Answering questions using bar graphs | |

## 8.5 (GRADE 4) TOPIC 1: NUMBER (0 to 10 000)

| **SUB TOPIC** | **OBJECTIVES**<br>Pupils should be able to: | **CONTENT**<br>(knowledge, skills, values and attitudes) | **SUGGESTED NOTES AND ACTIVITIES** | **SUGGESTED RESOURCES** |
|---|---|---|---|---|
| Whole Numbers | • read numbers in words and Arabic numerals<br>• write numbers in words and Arabic numerals<br>• tell positions of objects in a row<br>• draw abacuses to show numbers<br>• write whole numbers in expanded notation. | • Numerals<br>• Words<br>• Ordinal numbers<br>• Place value digits | • Reading any number in words and Arabic numerals<br>• Using stories that involve the element of counting animals<br>• Writing any number words and Arabic numerals<br>• Identifying positions of objects in a row | • Number lines<br>• Number cards<br>• Abacus<br>• Number squares |

| | | | | |
|---|---|---|---|---|
| | | | • Representing numbers on abacuses<br>• Reading and writing numbers in expanded notation | |
| | • compare any 2 numbers using the comparison signs (>, <, =)<br>• arrange numbers in order of size<br>• round off to the nearest ten, hundred and thousand | • Comparison signs (>, <, =)<br>• Ordering<br>• Approximation | • Comparing any two numbers, objects and quantities using (<, >, =)<br>• Ordering numbers in descending and ascending order<br>• Approximating quantities by rounding off numbers to the nearest ten, hundred, thousand. | • Objects in the environment such as maize cobs, maize plants, trees<br>• School enrolment records<br>• Counters<br>• Technological devices |
| Arabic and Roman Numerals | • write numbers in Arabic and Roman Numerals<br>• convert numbers from Arabic to Roman numerals and vice-versa | • Numeration systems<br>• Roman numeral (I to L) | • Expressing Arabic numbers as Roman numerals and vice-versa | • Abacuses<br>• Clock faces with Roman and Arabic numerals |
| Proper fractions | • write fractions in numerals<br>• Interpret diagrams representing fractions<br>• shade fractions on diagram<br>• reduce fractions to lowest terms<br>• use fractions and number strips to find equivalent fractions<br>• compare fractions<br>• arrange fractions in ascending and descending order | • Fractions with denominators 2; 4; 5; 10 and 20<br>• Diagrammatic representation<br>• Equivalent fractions<br>• Comparisons<br>• Arrangements | • Identifying, reading and writing fractions in numerals<br>• Illustrating using diagrammatic representation of fractions<br>• Simplifying fractions to lowest terms<br>• Matching and sorting fractions by size using number strips | • Regular shapes that can be divided<br>• Number chart,<br>• Fraction charts<br>• Fraction strips |

| | | | | |
|---|---|---|---|---|
| | | | • Using common denominator<br>• Arranging fractions in ascending and descending order | |
| Mixed Numbers | • identify parts of a mixed number<br>• write mixed numbers from diagrams<br>• compare mixed numbers<br>• arrange mixed numbers in ascending and descending order. | • Mixed numbers (where denominators are 2, 4, 5, 10) | • Describing parts of a mixed number<br>• Identifying, reading and writing diagrammatic representations of mixed numbers.<br>• Comparing mixed numbers using diagrams<br>• Placing mixed numbers in ascending and descending order. | • Number line<br>• Charts and diagrams of various figures. |
| Decimal Numbers | • write decimals up to one decimal place.<br>• relate fractions with denominators 10 and 100 to decimals.<br>• compare decimals.<br>• write decimals in expanded form.<br>• arrange decimals in ascending and descending order.<br>• round off decimals to the nearest unit or tenth (one decimal place). | • Decimals up to one decimal places. | • Identifying, reading and writing decimals up to one decimal places.<br>• Changing decimals to proper fractions with denominators 10 and 100.<br>• Comparing any two decimal places using >; <; =.<br>• Representing decimal numbers in expanded notation such as 7,4 =7 + 0,4. | • Abacuses<br>• Number lines<br>• Fraction charts |

| | | | | |
|---|---|---|---|---|
| | | | • Arranging decimals in order of size with the same whole number.<br>• Approximating decimals to the nearest unit and tenth. | |
| Percentages | • read fractions with a denominator of 100<br>• write fractions with a denominator of 100<br>• express halves, quarters, fifths, and tenths as percentages.<br>• use 100 square grids to express fractions as percentages. | • Percentages of fractions. | • Identifying and writing fractions with denominator 100.<br>• Drawing diagrams representing percentages.<br>• Using diagrams to represent percentages.<br>• Changing halves, quarters, fifths and tenths to percentages.<br>• Using fraction charts and 100 square grids to show fractions then express as percentages.<br>• Discussing the use of percentages in real life.<br>• **NB: Link fractions with a denominator of 100 to percentage.** | • Fraction charts<br>• 100 square grids<br>• Discounts advertisements<br>• Technological tools |

## 8.6 (GRADE 4) TOPIC 2: OPERATIONS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Addition of whole numbers | • add whole numbers within the range carrying up to 2 times | • Addition of whole numbers whose sum is less than or equal to 10 000 | • Demonstrating basic addition facts<br>• Finding the sum of 2 or 3 whole numbers including carrying up to 2 times<br>• Application of addition in real life situations | • Abacuses<br>• Counters<br>• Flash cards<br>• Notes and coins<br>• Abacus diagrams<br>• Clock faces<br>• Calculators<br>• Smart phones |
| Subtraction of whole numbers | • subtract whole numbers | • Subtraction of two whole numbers within the range 0 to 10 000 | • Demonstrating basic subtraction facts<br>• Subtracting whole numbers<br>• Application of subtraction in real life situations | • Abacuses<br>• Counters<br>• Flash cards<br>• Notes and coins<br>• Abacus diagrams<br>• Clock faces<br>• Calculators<br>• Smart phones |
| Multiplication of whole numbers | • demonstrate multiplication facts by single digits<br>• multiply where carrying is involved. | • Multiplication of whole numbers whose product is less than 1 000 | • Illustrating multiplication facts such as the product of 2, 3 and 4 | • Rulers<br>• Clocks<br>• Scales<br>• Counters |

| | | | | |
|---|---|---|---|---|
| | • calculate factors of numbers between 1 and 100 | | • Filling in blanks in multiplication<br>• Multiplying whole numbers by one digit number including carrying up to 2 times<br>• Finding factors of numbers between 1 and 100<br>• Application of multiplication in real life situations<br><br>• **N.B Use of mathematical terms such as product of , multiplier and multiplicand should be used** | |
| Division of whole numbers by one digit number | • divide whole numbers by one digit number | • Division of whole numbers (1 to 1 000) by 1 digit number | • Practicing basic division facts<br>• Carrying out division without remainder<br>• Carrying out division with 1 digit remainders<br>• Application of division in real life situations<br><br>• **N.B. Terms such as divisor, quotient and dividend should be introduced** | • Number lines<br>• Rulers<br>• Counters<br>• Notes and coins |
| Multiplication of proper fractions | • calculate fractions of whole numbers<br>• multiply proper fractions | • Multiplication of proper fractions (with denominators 2, 4, 5 and 10) | • Finding fractions of whole numbers<br>• Multiplying fractions | • Number lines<br>• ICT tools<br>• Fraction charts |

| | | | | |
|---|---|---|---|---|
| | | | • | |
| HCF and LCM | • find the HCF of two numbers (where the HCF is less than 10)<br>• calculate LCM of two numbers (where the LCM is less than 50) | • Finding HCF of a pair of numbers<br>• Finding LCM of a pair of numbers | • Defining the terms HCF and LCM<br>• Demonstrating how to find HCF and LCM in the ranges. | • Matching cards<br>• Games<br>• Worksheets<br>• Loop cards<br>• Online resources |
| Addition of proper fractions | • add up to three proper fractions with the same denominator | • Addition of proper fractions not more than 3 terms involved<br>• Addition of proper fractions with the same denominators of 2, 4, 5,10 and 20 | • Identifying parts of a fraction<br>• Adding proper fractions where denominators are the same and not more than three terms are involved | • Number lines<br>• ICT tools<br>• Fraction charts |
| Subtraction of proper fractions | • subtract proper fractions with the same denominators | • Subtraction of proper fractions not more than three terms involved where denominators are the same: 2,4,5,10 and 20 | • Subtracting proper fractions where denominators are the same and not more than three terms are involved | • Number lines<br>• ICT tools<br>• Real objects<br>• Fraction charts |
| Addition of decimals | • add decimals | • Addition of decimals up to 1 decimal place | • Revising place values<br>• Adding decimal numbers<br>• Applying addition of decimals to real life situations | • Abacuses<br>• Number lines<br>• Work cards<br>• Counters |
| subtraction of decimals | • subtract decimals | • Subtraction of decimals up to 1 decimal place | • Subtracting decimal numbers<br>• Applying subtraction of decimals to real life situations | • Abacuses<br>• Number lines<br>• Work cards<br>• Counters |

## 8.7 (GRADE 4) TOPIC 3: MEASURES

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Money | • express money in dollars and cents and vice versa<br>• break down money into smaller denominations<br>• calculate change within the range<br>• describe heritage features on Zimbabwean coins and notes<br>• perform operations involving money | • Money up to $50<br>• Conversions<br>• Change | • Changing dollars to cents and vice versa<br>• Breaking down large amounts into smaller denominations<br>• Calculating change within the range through role play to enhance financial literacy<br>• Describing heritage features on Zimbabwean coins and notes<br>• Carrying out addition, subtraction, multiplication and division involving money<br>• Applying the concept of money in real life situations | • Real coins and notes<br>• Paper money<br>• Card representation of money |
| Time | • identify units of time<br>• use am, pm, weekly and fortnight to tell time<br>• tell time to the nearest five minutes<br>• convert time from one unit to another (minutes to hours, days to weeks, days to fortnights, weeks to months) | • Units of time<br>• Approximation of time<br>• Application of time<br>• Time conversions | • Giving units of time<br>• Using am, pm, weekly and fortnightly.<br>• Reading time on clock faces to the nearest five minutes<br>• Changing units of time from one unit to another<br>• Applying the concept of time in real life situations | • Clock faces<br>• Watches<br>• Sun dials<br>• Calendars |
| • Mass (Units and conversions of mass up to 10 kilograms) | • find the mass of different objects<br>• convert kilograms to grams<br>• perform operations involving mass | • Units of mass up to 10 kilograms<br>• Conversions of mass | • Weighing objects in grams and kilograms<br>• Converting kilograms to grams<br>• Carrying out operations involving mass | • Scales<br>• Balances<br>• Containers<br>• Weights |

| | | | | |
|---|---|---|---|---|
| | | | • Applying the concept of mass in real life situations | |
| Length | • approximate length using spans and paces<br>• measure length to the nearest centimetres and metres<br>• convert units of length within the range<br>• perform operations involving length | • Length using non-standard units (spans and paces)<br>• Length using standard units centimetres in the range 0-30 and metres in the range 1-100<br>• Conversion of units of length:<br>-Millimetres to centimetres<br>-Centimetres to metres | • Measuring length using spans and paces<br>• Finding lengths of lines and objects using standard units of measurement i.e. centimetres and metres<br>• Converting units of length to their equivalence<br>• Discussing how indigenous cultures map their territories and the significance of land boundaries<br>• Executing operations involving length<br>• Applying the concept of length in real life situations | • Rulers<br>• Metre rules<br>• Measuring tapes<br>• Click wheels<br>• Calibrated Strings<br>• ICT tools<br>• Indigenous Knowledge Systems |
| Shapes | • name different plane shapes<br>• name different solid shapes<br>• identify various shapes in patterns<br>• state properties of plane and solid shapes<br>• draw solid shapes<br>• construct solid shapes | • Properties of plane shapes squares, rectangles, right angled triangles, circles<br>• Properties of solid shapes<br>• Construction of solid shapes | • Naming and drawing representations of plane shapes: squares, rectangles, right angled triangles, circles<br>• Naming and drawing representations of solid shapes: cylinders, cubes, rectangular prisms, and spheres<br>• Drawing and colouring of shapes<br>• Making models of solid shapes | • Models of shapes<br>• Scissors<br>• Paper<br>• Paint<br>• Crayons<br>• Brushes<br>• Road signs<br>• Reeds<br>• Sticks<br>• Pins and nails<br>• ICT tools |
| Perimeter | • find perimeter of various shapes | • Perimeter:<br>-Triangle<br>-Square | • Measuring and calculating perimeter of various shapes | • Rulers<br>• Metre rules<br>• Measuring tapes |

| | | | | |
|---|---|---|---|---|
| | | -Rectangle | | • Click wheels |
| Rate | • relate two measures | • Rate of two measures | • Linking two measures correctly to express rate such as kilometres per hour<br>• Applying rate to measures such as mass, time and volume<br>• Applying the concept of rate in real life situations | • Clock faces<br>• Distance tables |
| Area | • find area of a square<br>• calculate area of a rectangle<br>• compute area of a right - angled triangle | • Area of rectangle, square and right-angled triangle | • Marking square grids in squares and rectangles<br>• Counting and tableting the number of squares along the length and width to establish that **length x width = area of rectangle**<br>• Using formula to calculate area of rectangle and square<br>• Discovering area of right angled triangle by folding rectangles and squares | • Square and rectangular shapes<br>• Geo boards |
| Volume and capacity | • convert millilitres to litres and vice versa<br>• measure volume of liquids using half litre and quarter litre containers<br>• find capacity and volume of liquids in millilitres and litres | • Conversion of units of volume<br>• Measurement of volume<br>• Capacity and volume of liquids | • Converting millilitres to litres and vice versa<br>• Measuring volume of liquids using half litre and quarter litre containers<br>• Finding capacity and volume of liquids in millilitres and litres<br>• Applying the concept of volume and capacity in real life situations<br>• Estimating volume and capacity of locally available containers | • Graduated containers: 1 litre, half litre and quarter litre containers |

| | | | | |
|---|---|---|---|---|
| | | | **NB: Poisonous liquids and contaminated containers should be avoided** | |
| Direction, angles and lines | • illustrate diagrammatically the four cardinal points<br>• identify horizontal and vertical lines<br>• identify right angles<br>• illustrate a complete revolution, quarter and half of a revolution | • Cardinal points<br>• Horizontal and vertical lines<br>• Right angles<br>• Revolution | • Showing cardinal points<br>• Drawing a compass and labelling the four cardinal points<br>• Drawing horizontal and vertical lines<br>• Drawing diagrams with right angles<br>• Showing quarter, half and complete revolution<br>• Identifying and naming right angles on the compass and drawing diagrams with right angles showing use of right angles in life situations<br>• Giving directions of places and heritage sites in relation to the school | • Compasses<br>• Maps<br>• Card strips<br>• Diagrams on charts<br>• Rulers |

## 8.8 (GRADE 4) TOPIC: RELATIONSHIPS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| • Data handling | • collect data<br>• interpret information from tables | • Data collection<br>• Tables | • Congregating data<br>• Interpreting information from tables<br>• Solving problems using tables | • Timetables<br>• Newspaper cuttings of tables<br>• Calendars<br>• Charts with graphs |
| | • interpret information from bar graphs | • Bar graphs | • Reading information from bar graphs<br>• Answering questions using bar graphs | • Timetables<br>• Newspaper cuttings of tables<br>• Calendars<br>• Charts with graphs |
| | • represent information from column graphs<br>• interpret information from bar graphs | • Tally system<br>• Column graphs | • Showing data using column graphs<br>• Interpreting information from bar graphs<br>• Conducting simple investigations and gathering data within the classroom and the environment such as ages, trees, shoe sizes, months of births | • Timetables<br>• Newspaper cuttings of tables<br>• Calendars<br>• Charts with graphs |
| | • identify a pie chart.<br>• identify the different sections (slices) of a pie chart.<br>• divide a circle into sections to represent data. | • Pie Charts | • Identifying a pie chart.<br>• Identifying the different sections (slices) of a pie chart.<br>• Dividing a circle into sections to represent data. | • Interactive pie charts<br>• Chart paper<br>• Colored pencils/markers<br>• Paper plates (for creating 3D pie charts)<br>• Printed pie chart templates |

## 8.9 (GRADE 5) TOPIC 1: NUMBER (0 to 100 000)

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Whole numbers (0–100 000) | • read/sign numbers in words and numerals<br>• write numbers in words and numerals<br>• express numbers in expanded notation/form<br>• count in ascending and descending order<br>• arrange numbers in order of size<br>• give values of digits in a number<br>• write ordinal numbers up to hundredth<br>• use ordinal numbers in ranking and positioning<br>• write ordinal numbers in words and numerals<br>• write number sequences | • Numerals in words<br>• Number notations<br>• Place value<br>• Ordinal numbers<br>• Number sequence | • Reading/signing numbers in words and numerals<br>• Writing numbers in words or numerals<br>• Expressing numbers in expanded notation<br>• Counting numbers in descending and ascending order<br>• Arranging numbers in descending and ascending order<br>• Picking out values of digits in any number such as 4 562: where digit 5 is five hundreds<br>• Sequencing numbers in order of size<br>• Designing number sequences | • Abacuses<br>• flash cards<br>• charts<br>• counters<br>• number line strips<br>• technological devices |

| | | | | |
|---|---|---|---|---|
| | | | **NB: consolidating ideas using calculators and smart phones** | |
| | • round off numbers to a degree of accuracy<br>• apply approximation in life situations<br>• compare numbers | • Approximation/estimation (nearest 10, 100, 1 000, and 10 000)<br>• Comparison | • estimating numbers to the nearest 10, 100, 1 000, and 10 000<br>• Comparing numbers using >, < and =. | • Counters<br>• number line strips<br>• flash cards |
| | • read/sign Roman numerals<br>• write Roman numerals<br>• convert Roman numerals to Arabic numerals within the range | • Numeration system (Arabic: 1-20 and Roman Numerals: I to XX or vice versa) | • Stating Roman numerals, I to XX<br>• Reading/Signing Roman numerals, I to XX<br>• Demonstrating how Roman numeration is built from 1-20<br>• Expressing Arabic numerals to Roman numerals within the range 1-20 | • Number cards<br>• conversation charts<br>• watches |
| Proper Fractions (denominators 2 to 10 and 20) | • identify proper fractions with denominators in the given range<br>• read/sign fractions with denominators in the given range<br>• write fractions with denominators in the given range<br>• compare fractions<br>• write fractions in their equivalent forms<br>• reduce fractions to their lowest terms<br>• arrange fractions in ascending or descending order | • Comparison<br>• Equivalence<br>• Lowest terms<br>• Sequencing | • Selecting fractions with denominators in the range<br>• Stating fractions with denominators in the range<br>• Writing fractions with denominators in the range<br>• Expressing fractions using <, > and = signs<br>• Simplifying fractions to their lowest terms | • fraction chart<br>• work cards<br>• flash cards<br>• technological tools<br>• real objects |

| | | | | |
|---|---|---|---|---|
| | | | • Expressing fractions in their equivalent forms<br>• Arranging a set of fractions in ascending or descending order | |
| Mixed Numbers (with denominators 2 to 10) | • identify mixed numbers<br>• read/sign mixed numbers<br>• write mixed numbers<br>• convert mixed numbers to improper fractions and vice versa<br>• compare mixed numbers<br>• solve problems involving mixed numbers | • mixed numbers<br>• Conversion<br>• Comparison | • Forming mixed numbers by putting together wholes and fractions 3 and $\frac{1}{4}$ written as $3\frac{1}{4}$<br>• Using diagrammatic representations of mixed numbers<br>• Converting mixed numbers to improper fractions and vice-versa<br>• Comparing mixed numbers using signs <, > and = signs<br>• Applying mixed numbers in solving problems: sharing | • Fraction charts<br>• Diagrams<br>• Regular objects<br>• technological tools |
| Decimals (up to two decimal places) | • identify decimals<br>• read/sign decimal<br>• write decimals<br>• determine place value of a digit in a decimal<br>• interpret diagrammatic representation of decimals<br>• compare decimals | • Numeration<br>• Place value<br>• Comparison<br>• Estimation | • Stating in numerals up to two decimal places<br>• Reading/signing in numerals up to two decimal places<br>• Writing in numerals up to two decimal places<br>• Giving values of digits in numbers up to 3 decimal places with not more | • Abacuses<br>• diagrams of fractions<br>• decimal fraction charts, |

| | | | | |
|---|---|---|---|---|
| | • round off decimals to the nearest unit/whole number and 1 decimal place | | • than 5 digits<br>• Illustrating diagrammatic representation of decimals<br>• Comparing decimals using the <, > and = signs<br>• Estimating decimals to the nearest unit and tenth | |
| Percentages | • express fractions as percentages and vice versa<br>• change one quantity/amount as a percentage of another<br>• compare percentages<br>• show relationships between percentages and fractions | • Conversion<br>• Comparison<br>• Equivalence | • Converting percentages to fractions and vice versa<br>• Expressing one quantity/amount as percentages of another<br>• Comparing percentages using <, > or = signs<br>• Finding percentages equivalent to: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{10}$ | • 100 square grids<br>• Charts<br>• Calculators |

## 8.10 (GRADE 5) TOPIC 2: OPERATIONS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Addition of whole numbers | • demonstrate an understanding of basic addition facts<br>• add numbers which require carrying twice<br>• demonstrate commutative law in addition | • Addition of whole numbers whose sum is less than or equal to 100 000<br>• commutative law | • Summing up whole numbers which do not require carrying<br>• Adding whole numbers which require carrying twice<br>• Working out problems involving the commutative law (10+7=17↔7+10=17) | • Work cards<br>• Abacuses<br>• Number line strips<br>• Counters |
| Subtraction of whole numbers (0 – 100 000) | • subtract numbers within the range<br>• subtract numbers involving one or two equal additions | • Subtraction of two whole numbers within the range 0 – 100 000 | • Reinforcing basic subtraction facts through mental work<br>• Computing subtraction of numbers involving one or two equal additions<br>• Using indigenous games in subtraction | • Abacuses<br>• Work cards<br>• Number line strips |
| Multiplication of whole numbers | • demonstrate an understanding of basic multiplication<br>• multiply numbers by two-digit numbers<br>• multiply numbers by multiples of 10 up to 100 | • Multiplication of whole numbers (whose product is less than 5 000) | • Constructing multiplication tables<br>• Multiplying whole numbers by two-digit multipliers without carrying<br>• Multiplying numbers by two-digit multipliers with carrying | • Work cards<br>• Counters<br>• Multiplication dials |

| | | | | |
|---|---|---|---|---|
| | | | • Multiplying whole numbers by multiples of 10 up to 100 | |
| Division of whole numbers | • demonstrate division as repeated subtraction<br>• carry out division by two-digit divisor without remainders (where the two-digit numbers are multiples of 10, that is 10,20,30… up to 90)<br>• carry out division by two-digit divisor with remainders where both the divisor and the dividend are multiples of 10 | • Division of whole numbers within the range 1 – 10 000 by two-digit numbers | • Demonstrating division as repeated subtraction<br>• Dividing by two-digit number e.g.<br>3 680 ÷ 40 = 92<br>• Carrying out division by two-digit divisor with remainders where both the divisor and the dividend are multiples of 10<br>2 650 ÷ 20 = 132 r 10 | • Tables<br>• Counters |
| Multiplication of proper fractions | • multiply proper fractions by whole numbers<br>• multiply proper fractions by fractions | • Multiplication of proper fractions (with denominators from 2 to 10 | • Multiplying proper fractions by whole numbers<br>• Multiplying fractions by fractions | • Number line strips<br>• Fraction charts |
| HCF and LCM | • find the HCF of two numbers (where the HCF is less than 10)<br>• calculate LCM of two numbers (where the LCM is less than 50) | • Highest Common Factor (HCF) of two numbers<br>• Lowest Common Multiple (LCM) of two numbers | • Listing factors of given numbers<br>• Deducing HCF of two numbers from listed factors<br>• Calculating LCM of two numbers | • Work cards<br>• Counters |
| Addition of proper fractions | • add (up to 3) proper fractions with same denominators from 2 to 10 and 20<br>• add (up to 2) proper fractions with different denominators from 2 to 10 and 20 | • Addition of (up to 3) proper fractions with same denominators from 2 to 10 and 20<br>• Addition of (up to 2) proper fractions with | • Summing up of proper fractions with same denominators<br>• Finding the total of fractions with different denominators | • Equivalent fraction charts<br>• Blocks<br>• Counters<br>• Rods |

| | | | | |
|---|---|---|---|---|
| | | different denominators from 2 to 10 and 20 | | |
| Subtraction of proper fractions | • subtract proper fractions with the same denominators from 2 to 10 and 20<br>• subtract proper fractions with different denominators from 2 to 10 and 20 | • Subtraction of proper fractions (with same and different denominators from 2 to 10 and 20) | • Subtracting proper fractions with same denominator<br>• Solving problems involving proper fractions with different denominators | • Equivalent fraction charts<br>• Blocks<br>• Counters<br>• Rods |
| Addition of decimals | • add decimals up to two decimal places | • Addition of decimals (up to two decimal places) | • Identifying place value<br>• Finding the sum of decimals | • Abacuses<br>• Work cards |
| Subtraction of decimals | • subtract decimals with up to two decimal places | • Subtraction of decimals with up to two decimal places. | • Finding the difference of decimals | • Abacuses<br>• Work cards |
| Multiplication of decimal numbers | • multiply decimal numbers up to two decimal places by one-digit whole number | • Multiplication of decimal numbers up to two decimal places by one-digit whole number | • identifying the place value of a digit in a decimal number<br>• Multiplying decimal numbers up to two decimal places by one-digit whole number for example 1,25x3=3,75 or 12,3x5=61,5 | • Abacuses<br>• Work cards<br>• Flash cards |
| Division of decimal numbers | • divide decimals up to two decimal places by one-digit whole number | • Division of decimal numbers up to two decimal places by one-digit whole number | • Identifying the place value of a digit in a decimal number<br>• Dividing decimals by one digit number for example 3,96÷3=1,32 or 2,5÷5=0,5 | • Abacuses<br>• Work cards<br>• Flash cards |

## 8.11 (GRADE 5) TOPIC 3: MEASURES

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Money | • identify features on Zimbabwean currency<br>• demonstrate relationship between notes and coins<br>• convert money from cents to dollars and vice-versa<br>• calculate change | • Notes and coins up to $100<br>• Change<br>• Conversions | • Identifying features on Zimbabwean currency<br>• Naming the denominations of the currencies in use<br>• Showing relationships of currency denominations<br>• Role playing buying and selling<br>• Converting cents to dollars and vice-versa<br>• Computing change | • Coins<br>• Notes<br>• Shop corner<br>• Pictures of the big five animals<br>• Zimbabwean flag, heritage sites<br>• Balancing rocks<br>• Charts<br>• ICT tools |
| Time | • tell time<br>• estimate time from shadows and the position of the sun<br>• estimate time intervals of different actions and activities<br>• convert units of time | • Time units<br>• Approximation of time.<br>• Application of time (am, pm, weekly, fortnightly and monthly)<br>• Conversions of time (minutes to hours, days to weeks, days to fortnights, months to years, decades)<br>• Seconds to minutes | • Telling time<br>• Estimating time intervals of activities such as:<br>i) A clap of hands<br>ii) A blink of an eye<br>iii) A jump<br>• Expressing time in am and pm<br>• Converting units of time such as:<br>i) 1 hour = 60minutes<br>ii) 2 weeks = fortnight = 14 days<br>iii) 1 ordinary year = $365\frac{1}{4}$ days | • Wrist watches<br>• Clock faces<br>• Calendars<br>• ICT tools<br>• Pictures |

| | | | | |
|---|---|---|---|---|
| | | | iv) 1 leap year = 366 days<br>• Constructing model clock faces using locally available materials | |
| Mass | • identify standard units of measuring mass<br>• change grams to kilograms and vice-versa<br>• compare mass of objects<br>• approximate mass up to 100kg | • Standard units of measuring mass<br>• Conversion of mass up to 100kg<br>• Comparison of mass | • Measuring masses of different quantities<br>• Establishing that 1 000g = 1kg<br>• Comparing masses using heavy and light<br>• Comparing masses using <; =; ><br>• Discussing the importance of mass in life situations | • Different objects<br>• Measuring scales<br>• ICT tools |
| Length | • identify standard units of measuring length<br>• measure length using standard units<br>• estimate length using non-standard units<br>• convert units of length within the range<br>• perform operations involving length | • Length using standard and non-standard units centimetres in the range 0-30 and metres in the range 1-100<br>• Conversion of units of length:<br>-Millimetres to centimetres<br>-Centimetres to metres | • Identifying units of measuring length<br>• Measuring distances up to 10m using standard units<br>• Estimating distances up to 1m using non-standard units<br>• Giving equivalent to units of lengths | • 30cm rules<br>• 1m rules<br>• Rope or string<br>• Spans<br>• Paces<br>• Bricks<br>• Technological tools |
| Shapes | • name plane and solid shapes<br>• describe properties of plane and solid shapes<br>• name polygons of up to 5 sides | • Plane and solid shapes<br>• Polygons up to 5 sides squares, rectangles, triangles, kite, pentagon | • Naming plane shapes<br>• Naming solid shapes<br>• Describing properties of plane and solid shapes<br>• Identifying polygons | • Technological tools<br>• Charcoal<br>• Plane and solid shapes<br>• Objects in the immediate environment (including the natural environment) |

| | | | | |
|---|---|---|---|---|
| | | • Solid shapes cube, rectangular prism, cone, cylinder and sphere<br>• Properties of solid shapes<br>• Construction of solid shapes | • Drawing heritage artefacts such as huts, winnowing baskets and patterns to illustrate uses of plane and solid shapes in real life situations<br>• Educational tours to heritage sites | • Pictures |
| Perimeter | • calculate perimeter of plane shapes | • Perimeter (up to 5 sides) squares, rectangles, triangles, kite, pentagon | • Finding perimeter of shapes by measuring<br>• Calculating perimeter of plane shapes<br>• Deducing the formulae for calculating perimeter of plane shapes to come up to:<br>- Perimeter of rectangle = 2(Length + Width)<br>- Perimeter of square = 4 x Side | • Rectangular shapes<br>• Square shapes<br>• ICT tools |
| Rate | • relate two quantities as rate | Rate of two measures | • Linking two measures correctly to express rate such as kilometres per hour<br>• Applying rate to measures such as mass, time and volume<br>• Applying the concept of rate in real life situations | • Bills<br>• Meter readings<br>• Speedometers<br>• Technological tools |
| Area | • estimate the area of square, rectangle and triangle using non-standard units<br>• calculate area of square, rectangle and triangle using formulae | • Area: standard and non -standard units (rectangle, square and triangle) | • Estimating the area of plane shapes by counting squares<br>• Deducing the formulae for calculating area of squares, rectangles and triangles to come up to: | • Metre rules<br>• Metre sticks<br>• Tape measure<br>• Technological tools<br>• Pictures of plane shapes |

| | | | | |
|---|---|---|---|---|
| | | | - Area of square = Side x Side<br>- Area of rectangle = Length x Width<br>- Area of Triangle = $\frac{1}{2}Base\ x\ Height$<br>• Finding area of plane shapes using formulae<br>• Solving life problems involving area | • Objects in the environment |
| Volume and capacity | • calculate volume of cube and cuboid | • Volume and capacity: cube and cuboid | • Estimating the volume of cube and cuboid<br>• Deriving and using the formulae to calculate the volume of cube and cuboid<br>• Computing the volume of cube and cuboid<br>• Experimenting to prove that $1cm^3 = 1ml$ | • Cubes<br>• Cuboids<br>• Sand<br>• Water<br>• ICT tools |
| Direction, angles and lines | • identify the eight cardinal points<br>• locate positions using cardinal points<br>• identify horizontal and vertical lines<br>• illustrate quarter, half, three quarter and complete revolution using a circle | • Direction (8 cardinal points)<br>• Angles and lines<br>• Revolution | • Identifying the cardinal points<br>• Establishing that the sun rises from the east and sets in the west<br>• Locating positions of objects using cardinal points<br>• Sketching horizontal and vertical lines<br>• Illustrating quarter, half, three quarter and complete revolution using a circle | • Compasses<br>• Diagrams showing directions<br>• Charts with angles<br>• Compass points<br>• Computers<br>• Smart phones<br>• Projectors<br>• Smart boards |

| | | | | |
|---|---|---|---|---|
| | | | • Identifying the relative positions of things and places located within the local environment using cardinal points | |

## 8.12 (GRADE 5) TOPIC: RELATIONSHIPS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| • Data handling | • collect statistical data<br>• read and interpret data from:<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Ready reckoners<br>- Pie charts<br>- Pictographs | • Tables<br>• Bar graphs<br>• Column graphs<br>• Ready reckoners<br>• Pie charts<br>• Pictographs | • Interpreting data from various sources<br>• Collecting data from the community in groups, for example demographic data, access to health facilities<br>• Recording information collected using tables<br>• Solving life problems using information from statistical diagrams<br>• Educational tours to heritage sites to view rock paintings | • Print media<br>• Timetable<br>• Charts<br>• Graphs<br>• Electronic devices<br>• Rock paintings |

## 8.13 (GRADE 6) TOPIC: NUMBER (0–1 000 000)

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Whole numbers (0–1 000 000) | • read/sign numbers in words and numerals<br>• write numbers in words and numerals<br>• express numbers in expanded notation/form<br>• count in ascending and descending order<br>• arrange numbers in order of magnitude<br>• give values of digits in a number<br>• write ordinal numbers up to hundredth<br>• use ordinal numbers in ranking and positioning<br>• write ordinal numbers in words and numerals<br>• write number sequences<br>• identify prime numbers | • Numerals in words<br>• Number notation<br>• Place value<br>• Ordinal numbers<br>• Number sequence<br>• Prime numbers | • Saying/signing numbers in words and numerals<br>• Writing numbers in words or numerals<br>• Expressing numerals in expanded notation<br>• Counting numbers in descending and ascending order<br>• Arranging sets of numbers in order of magnitude<br>• Identifying values of digits in any number such as 4 562: where digit 5 is five hundred<br>• Sequencing numbers in order of size<br>• Designing number sequences<br>• Listing prime numbers between 0–50<br>• Consolidating of ideas using calculators and smart phones | • Abacuses<br>• Number lines<br>• 50 square grids<br>• Work cards<br>• Calculators<br>• ICT tools |
| | • approximate numbers<br>• compare numbers | • Approximation/estimation (to the nearest 10, 100, 1 000, 10 000 and | • Estimating numbers to the nearest 10, 100, 1 000, 10 000 and | • Number line strips<br>• Number cards |

| | | | | |
|---|---|---|---|---|
| | | 100 000)<br>• Comparison | 100 000<br>• apply approximation in life situations<br>• Comparing two numbers by using <, > and = signs | |
| | • read/sign Roman numerals<br>• convert Roman numerals to Arabic numerals within the range and vice versa | • Numeration system (Arabic: 1-50 and Roman Numerals: I to L or vice versa)<br>• Conversion | • Stating Roman numerals, I to L<br>• Reading/Signing Roman numerals, I to L<br>• Expressing Arabic numerals to Roman numerals within the range 1-50 and vice versa | • Number cards<br>• Conversation charts<br>• Clock faces with Roman and Arabic numerals. |
| • Proper Fractions (denominators 2 to 10 and multiples of 5 up to 50) | • identify proper fractions with denominators in the given range<br>• read/sign fractions with denominators in the given range<br>• write fractions with denominators in the given range<br>• compare fractions<br>• arrange fractions in order of size<br>• write fractions in their equivalent forms<br>• reduce fractions to their lowest terms | • Numeration<br>• Comparison<br>• Equivalence | • Stating/signing fractions in numerals<br>• Writing fractions numerals<br>• Recognising, interpreting and using diagrammatic representation of proper fractions with denominators in the range<br>• Presenting fractions in equivalent form<br>$\frac{2}{6} = \frac{1}{3}$ | • Fraction charts<br>• Number cards<br>• Number line<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| | | | • Comparing two proper fractions using <, > and = signs<br>• Arranging proper fractions in order of size | |
| Mixed Numbers (with denominators 2 to 10) | • read/sign mixed numbers<br>• write mixed numbers<br>• convert mixed numbers to improper fractions and vice versa<br>• compare mixed numbers<br>• solve problems involving mixed numbers | • Numeration<br>• Conversion<br>• Comparison | • Saying/signing mixed numbers<br>• Writing mixed numbers<br>• Comparing two mixed numbers using <, > and = signs<br>• Changing mixed numbers to improper fractions and vice versa | • Mixed number charts<br>• Number lines<br>• ICT tools |
| Decimals (up to three decimal places) | • identify decimal numbers<br>• read/sign decimal numbers<br>• write decimals<br>• find the value of a digit in a decimal<br>• compare decimal numbers<br>• arrange decimal numbers in order of size<br>• round off decimal numbers to a degree of accuracy | • Numeration<br>• Place value<br>• Comparison<br>• Sequencing<br>• Estimation and approximation | • Stating any number expressed in decimal form up to three decimal places<br>• Reading/signing any number expressed in decimal form up to three decimal places<br>• Writing decimals in numerals up to three decimal places<br>• Writing decimal numbers in expanded notation to determine place value<br>• Comparing decimal numbers using <, > and = signs | • Number strips<br>• Abacuses<br>• Fraction charts<br>• Equivalent fractions charts<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| | | | • Grouping decimal numbers in order of magnitude<br>• Rounding off decimal numbers and measures to the nearest unit, tenth and hundredth | |
| Percentages | • express fractions as percentages and vice versa<br>• represent percentages on diagrams | • Conversion<br>• Illustration | • Converting percentages to fractions and vice versa<br>• Identifying percentages from diagrammatic representations and numerals<br>• Writing percentages from diagrammatic representations and numerals<br>• Applying percentages in life | • 100 square grids<br>• Number lines graduated up to 100<br>• Metre rules<br>• Calculators |

## 8.14 (GRADE 6) TOPIC 2: OPERATIONS (0 – 1 000 000)

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Addition of whole numbers<br>(0 – 1 000 000) | • add whole numbers whose sum is less than or equal to 1 000 000<br>• apply associative and commutative laws to addition of whole numbers | • Addition of whole numbers whose sum is less than or equal to 1 000 000 | • Finding the sum of whole numbers mentally<br>• Adding whole numbers which require carrying up to three times<br>• Using the commutative and associative laws where applicable | • Work cards<br>• Abacuses<br>• Number line strips<br>• Counters |
| Subtraction of whole numbers<br>(0 – 1 000 000) | • subtract whole numbers involving one to three equal additions | • Subtraction of whole numbers | • Subtracting whole numbers within the range<br>• Computing subtraction of numbers involving one to three equal additions<br>• Using indigenous games in subtraction | • Abacuses<br>• Work cards<br>• Number line strips |
| • HCF of two numbers (where the HCF is less than 10)<br>• LCM of two numbers (where the LCM is less than 100) | • find the HCF of two numbers (where the HCF is less than 10)<br>• calculate LCM of two numbers (where the LCM is less than 100) | • Highest Common Factor (HCF) and Lowest Common Multiple (LCM) | • Listing factors of given numbers<br>• Deducing HCF of up to two numbers<br>• Calculating LCM of two numbers | • Work cards<br>• Counters |
| Addition of proper fractions (with same or different denominators of 2 to | • add proper fractions with same denominators<br>• add proper fractions with different denominators | • Addition of proper fractions with same or different denominators of 2 to 10 and multiples of 5 up to 50 | • Summing up fractions with same denominators of 2 to 10 and multiples of 5 up to 50 | • Equivalent fractions charts<br>• Blocks<br>• Counters<br>• Rods |

| | | | | |
|---|---|---|---|---|
| 10 and multiples of 5 up to 50) | | | • Finding the total of fractions with different denominators of 2 to 10 and multiples of 5 up to 50 | |
| Subtraction of proper fractions (with same and different denominators of 2 to 10 and multiples of 5 up to 50) | • subtract proper fractions with same denominators of 2 to 10 and multiples of 5 up to 50<br>• subtract proper fractions with different denominators of 2 to 10 and multiples of 5 up to 50 | • Subtraction of fractions with same and different denominators of 2 to 10 and multiples of 5 up to 50 | • Subtracting proper fractions within the range | • Equivalent fractions charts<br>• Blocks<br>• Counters<br>• Rods |
| Addition of decimals (up to three decimal places) | • add decimals up to three decimal places | • Addition of decimals (up to three decimal places) | • Identifying place values<br>• Adding decimals up to 6 digits and up to 2 decimal places | • Abacuses<br>• Work cards |
| Subtraction of decimals (up to three decimal places) | • subtract decimals up to three decimal places | • Subtraction of decimals (up to three decimal places) | • Subtracting decimals up to 6 digits and up to 2 decimal places<br>• Solving life problems involving subtraction of decimals (measures) | • Abacuses<br>• Work cards<br>• Number lines |
| Multiplication of whole numbers (whose product is less than 10 000) | • demonstrate an understanding of basic multiplication facts<br>• multiply numbers by up to two-digit numbers<br>• illustrate multiplication using the short and long method | • Multiplication of whole numbers (whose product is less than 10 000) | • Multiplying numbers up to 12 x 12 including product values of 0<br>• Multiplying whole numbers by two-digit multipliers with or without carrying<br>• Devising ways of multiplying using the short and long method | • Work cards<br>• Counters<br>• Multiplication dials |

| | | | | |
|---|---|---|---|---|
| • Division of whole numbers by two-digit numbers | • demonstrate division using long method<br>• carry out division by two-digit divisor with or without remainders | • Division of whole numbers whose dividend is less or equal to 10 000 | • Devising ways of dividing whole numbers where the dividend is less or equal to 10 000<br>• Dividing by two-digit number e.g.<br>4 890 ÷ 15 = 326<br>• Finding solutions to problems involving division by 2-digit numbers with remainders e.g.<br>8 562 ÷ 20 = 428 r 2 | • Tables,<br>• Counters |
| Multiplication of proper fractions with denominators from 2 to 10 | • multiply proper fractions by up to 4-digit whole numbers<br>• conduct multiplication of proper fraction by proper fraction | • Multiplication of proper fractions (with denominators from 2 to 10<br>• Multiplication of proper fractions with denominators from 2 to 10 by proper fractions | • Multiplying proper fractions by whole numbers<br>• Multiplying proper fractions by proper fractions | • Number line strips<br>• Fractions chart |
| Multiplication of decimal numbers | • multiply decimals by decimals numbers up to 2 decimal places | Multiplication of decimal numbers up to 2 decimal places (where the multiplicand is a 3-digit number of up to 2 decimal places and the multiplier is a 2-digit number of up to 1 decimal place) | • carrying multiplication of decimals by decimals up to 2 decimal places for example 1,23x2,2=2,706 | • Abacuses<br>• Work cards<br>• Flash cards |
| Division of decimal numbers (up to 2 decimal places) | • divide decimal numbers by numbers up to 2 decimal places | Division of decimal numbers by decimals up to 2 decimal places | • Dividing decimals by decimal numbers up to 2 decimal places | • Abacuses<br>• Work cards<br>• Flash cards |

| | | | | |
|---|---|---|---|---|
| | | | • Dividing decimal numbers up to 2 decimal places using the long method | |
| Combined operations (up to 2 operations) | • work out mathematical problems involving 2 operations | Combined operations (up to 2 operations) | • Conducting addition and subtraction in the same problem using the rule of precedence<br>• Multiplying and dividing using the rule of precedence<br>**NB use law of precedence that is multiplication and division are carried out before addition and subtraction** | • Work cards<br>• Counters |

## 8.15 (GRADE 6) TOPIC 3: MEASURES

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Money | • Work out change<br>• Prepare invoices correctly<br>• Calculate profit or loss | • Notes and coins up to $200<br>• Conversions<br>• Financial transactions | • Visiting shops and noting prices<br>• Preparing invoices<br>• Calculating change<br>• Comparing the buying price and the selling price to determine the profit or loss<br>• Finding the profit or loss using the buying price and the selling price<br>• Role playing on buying and selling<br>• Discussing the importance of profit and loss in real life situations | • Invoices<br>• Corner store/shops<br>• Money<br>• Charts on buying and selling<br>• Receipts<br>• Models of tills<br>• ICT tools |
| Time | • tell time<br>• convert time<br>• estimate time taken<br>• calculate time taken<br>• write time in 12 hour and 24-hour notation<br>• express date in SI notation | • Time units<br>• 12 hour and 24-hour notation<br>• Standard international (SI) notation | • Applying units of time in relevant contexts: century, decade, leap year, month, week, day, hour, minute and second<br>• Relating time calculations to practical situations such as finding duration of time<br>• Telling the number of days in each month | • Charts on units of time<br>• Watches<br>• Calendars<br>• Clock faces<br>• digital clock<br>• Sun-dials |

| | | | | |
|---|---|---|---|---|
| | | | • Using the following conversions:<br>- 60minutes = 1 hour<br>- 24 hours = 1 day<br>- 7 days = 1 week<br>- $365\frac{1}{4}$ days = 1 ordinary year<br>- $366\ days = 1\ leap\ year$<br>- 10 years = 1 decade<br>- 100 years = 1 century<br>• Telling and writing time in SI notation<br>• Writing date in SI notation for example yyyy/mm/dd 2016/05/01 | |
| Mass (up to 1 000kg) | • measure mass<br>• calculate gross, net and tare mass<br>• convert grammes to kilogrammes and vice-versa<br>• compare mass of objects<br>• approximate mass up to 1 000kg | • Measurement of mass<br>• Gross, net and tare mass<br>• Conversion of mass up to 1 000kg<br>• Comparison of mass | • Measuring masses of different quantities<br>• Calculating gross, net and tare mass<br>• Establishing that 1 000g = 1kg<br>• Comparing masses using heavy and light<br>• Comparing masses using <; =; ><br>• Application of mass in life situations | • Objects<br>• Measuring scales<br>• ICT gadgets<br>• Balances<br>• Empty containers |

| | | | | |
|---|---|---|---|---|
| Length (standard and non-standard units up to 1 000m) | • estimate length using non-standard units<br>• measure length using standard units<br>• perform operations involving length | • Length: (standard and non-standard units up to 1 000m) | • Identifying units of measuring length<br>• Estimating distances up to 1m using non-standard units<br>• Measuring distances up to 10m using standard units<br>• Solving problems involving length | • 30cm rules<br>• 1m rules<br>• Calibrated ropes and strings<br>• Spans<br>• Paces<br>• Bricks<br>• Technological tools |
| Shapes | • determine lines of symmetry<br>• draw lines of symmetry<br>• state lines of symmetry<br>• state parts of a circle<br>• name polygons up to 10 sides | • Shapes: symmetry<br>• Geometrical parts of a circle:<br>-centre<br>-diameter<br>-circumference<br>-radius<br>-chord<br>-arc<br>-semi-circle<br>• Polygons up to 10 sides | • Illustrating lines of symmetry<br>• Drawing lines of symmetry<br>• Drawing the circle showing its parts<br>• Describing parts of a circle | • Technological tools<br>• Charts showing parts of a circle<br>• Plane shapes<br>• Objects in the immediate environment (including the natural environment)<br>• Pictures<br>• Letters of the alphabet |
| Perimeter of plane shapes (up to 10 sides) | • measure the distance around a shape<br>• calculate perimeter of shapes | • Perimeter of plane shapes (up to 10 sides) | • Finding perimeter of shapes by: a) Measuring<br>b) By adding the sides<br>c) Using the formulae:<br>- Perimeter of rectangle = 2(Length + Width) and Perimeter of Square = 4 x Side<br>• Measuring furniture<br>• Measuring boundaries in their local | • Rectangular shapes<br>• Square shapes<br>• ICT tools<br>• Rulers<br>• Tape measures<br>• Click wheel<br>• Local environment |

| | | | | |
|---|---|---|---|---|
| | | | communities including the sports grounds<br>• Solving problems involving perimeter | |
| Rate | • identify measurements of rate<br>• calculate different types of rate | • Rate: linking two quantities<br>• Use of the formula such as $S = \frac{D}{T}$<br>$D = D \times T$<br>$T = \frac{D}{S}$ | • Identifying measurements of rate<br>• Linking two measures correctly to express rate (km/hr, m/s)<br>• Discussing rates in life situations such as comparing speed of a person, car and aeroplane. | • Bills<br>• Meters<br>• Speedometers<br>• ICT tools<br>• Braille material |
| Area | • estimate the area of square, rectangle, triangle and composite shapes<br>• calculate area of square, rectangle, composite shapes and triangle using formulae | • Area: rectangle, square, triangle and composite shapes *made up of either rectangle, squares, triangles* | • Estimating the area of plane shapes by counting squares<br>• Applying the formulae:<br>- Area of square = *Side x Side*<br>- Area of rectangle = *Length x Width*<br>- Area of Triangle $= \frac{1}{2} base \times height$<br>$= \frac{base \times height}{2}$<br>• Finding area of plane shapes using formulae<br>• Solving life problems involving area<br>• **NB: Area is measured in square units** | • Metre rules<br>• Metre sticks<br>• Tape measure<br>• ICT tools<br>• Pictures of plane shapes<br>• Objects in the environment |

| | | | | |
|---|---|---|---|---|
| Volume and capacity | • calculate volume of regular objects<br>• determine volume of irregular objects by displacement | • Volume and capacity: regular and irregular shapes<br>• Calculation of volume<br>• Displacement | • Stating and using the following conversions:<br>- 1 000ml = 1litre<br>• Selecting appropriate unit to measure volume<br>• Applying the appropriate unit of volume<br>• Applying and using the formula: L x W x H for rectangular prisms<br>• Finding volume of irregular objects by displacement<br>• Solving life problems involving volume and capacity<br>• **NB: Volume is measured in cubic units ($cm^3$/ $m^3$)** | • Cubes<br>• Rectangular prisms<br>• Sand<br>• Water<br>• Containers<br>• ICT tools<br>• Irregular objects<br>• Measuring cylinders |
| Direction, angles and lines | • identify the eight cardinal points<br>• locate positions using cardinal points<br>• identify horizontal, vertical and/ perpendicular lines<br>• illustrate quarter, half, three quarter and complete revolution using a circle | • Direction, angles and lines<br>• Cardinal points | • Identifying the cardinal points<br>• Locating positions of objects using cardinal points<br>• Sketching horizontal, vertical lines and perpendicular lines<br>• Illustrating quarter, half, three quarters and complete revolution using a circle<br>• Identifying the relative positions of things and places located within the local environment using cardinal points | • Compasses<br>• Diagrams showing directions<br>• Charts with angles<br>• Compass points<br>• ICT tools<br>• Bicycle rims<br>• Tyres<br>• Protractors |

## 8.16 (GRADE 6) TOPIC: RELATIONSHIPS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| • Data handling | • collect statistical data<br>• read and interpret statistical data on ready reckoners such as:<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Pie charts<br>- Pictographs<br>• solve problems on measures using different graphs | Ready reckoners<br>• Tables<br>• Bar graphs<br>• Column graphs<br>• Pie charts<br>• Pictographs | • Collecting data from the community in groups, for example demographic data, access to health facilities<br>• Interpreting data from various sources<br>• Recording information collected using tables<br>• Answering questions using ready reckoners<br>• Solving life problems using information from statistical diagrams<br>• Researching on topical issues within their communities<br>• Educational tours to heritage sites to observe rock paintings | • Print media<br>• Timetables<br>• Charts<br>• Graphs<br>• Electronic devices<br>• Rock paintings<br>• Distance tables<br>• Graph papers<br>• Fare tables |

## 8.17 (GRADE 7) TOPIC: NUMBER (0–10 000 000)

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Whole numbers (0–10 000 000) | • read/sign numbers in words and numerals<br>• write numbers in words and numerals<br>• express numbers in expanded notation/form<br>• count in ascending and descending order<br>• arrange numbers in order of magnitude<br>• give values of digits in a number<br>• write ordinal numbers up to hundredth<br>• use ordinal numbers in ranking and positioning<br>• write ordinal numbers in words and numerals<br>• write number sequences<br>• identify prime numbers in the range 0 to 100<br>• find prime factors of numbers in the range 0 – 100 | • Numerals in words<br>• Number notations<br>• Place value<br>• Ordinal numbers<br>• Number sequence<br>• Prime numbers (0–100) | • Saying/signing numbers in words and numerals in the range<br>• Writing numbers in words or numerals in the range<br>• Finding the place value of a digit in a number<br>• Identifying place value of digits of numbers represented on an abacus<br>• Writing numbers in expanded index notation such as<br>$23\,574 = (2 \times 10^4) + (3 \times 10^3) + (5 \times 10^2) + (7 \times 10^1) + (4 \times 10^0)$<br>• Group numbers in ascending or descending order<br>• Comparing numbers using <, > and = signs<br>• Listing prime numbers in the range 0 to 100<br>• Finding prime factors of numbers in the range 0 to 100 | • Abacuses<br>• Number cards<br>• Seeds/counters<br>• Maize cobs<br>• Trees in a school plantation<br>• Number line charts<br>• Vegetables in the school garden<br>• 100- square grids<br>• ICT tools. |

| | | | | |
|---|---|---|---|---|
| | • approximate numbers<br>• compare numbers | • Approximation/estimation (nearest 10, 100, 1 000, 10 000, 100 000 and 1 000 000)<br>• Comparison | • Expressing numbers to the nearest 10, 100, 1 000, 10 000, 100 000 and 1 000 000<br>• compare numbers using comparison signs<br>• apply approximation in life situations | Number line strips<br>Number cards |
| | • convert Roman numerals to Arabic numerals within the range and vice versa | • Roman and Arabic numerals (I to L and 1–50)<br>• Conversion | • Matching Roman and Arabic numerals in the range I to L<br>• Working with Roman numeral symbols to construct numbers up to 50<br>• Changing from Roman to Arabic numerals and vice versa | • Clock faces with Roman and Arabic numerals, number line charts, number cards in Roman and Arabic numerals, group work cards and ICT tools. |
| • Proper Fractions (denominators 2 to 10 and multiples of 5 up to 100) | • identify proper fractions with denominators in the given range<br>• read/sign fractions with denominators in the given range<br>• write fractions with denominators in the given range<br>• compare fractions and arrange them in order of size<br>• interpret diagrams representing proper fractions<br>• arrange proper fractions in order of size<br>• convert proper fractions to decimals<br>• simplify proper fractions to their lowest terms | • Numeration<br>• Comparison<br>• Conversion<br>• Lowest terms | • Stating/signing fractions in numerals<br>• Writing fractions in numerals<br>• Using diagrams to represent proper fractions with denominators in the range<br>• Distinguishing proper fractions using <, > and = signs<br>• Arranging proper fractions in order of size | • Fraction charts<br>• Number line charts<br>• Diagrams to represent proper fraction<br>• Equivalency and conversion charts<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| | | | • Expressing proper fractions to decimals and vice- versa<br>• Reducing proper fractions to their lowest terms | |
| Mixed Numbers (denominators are 2 to 10) | • identify mixed numbers<br>• read/sign mixed numbers<br>• write mixed numbers<br>• represent mixed numbers on diagrams and vice- versa<br>• identify whole number and fraction parts of a mixed number<br>• write mixed numbers as improper fractions<br>• write mixed numbers as decimals | • Numeration<br>• Conversion<br>• Mixed numbers<br>• Improper fractions | • Reading /signing mixed numbers<br>• Writing mixed numbers<br>• Recognising diagrams representing mixed numbers<br>• Stating whole numbers and fractions in mixed numbers<br>• Converting mixed numbers to improper fractions and vice - versa<br>• Expressing mixed numbers as decimals and vice- versa | • Number line strip<br>• Fractions charts<br>• Conversion charts<br>• ICT tools |
| Decimals (up to three decimal places) | • identify decimal numbers<br>• read/sign decimal numbers<br>• write decimal numbers<br>• find the place value of digits in decimals<br>• write decimal numbers in expanded notation<br>• compare decimal fractions<br>• round off decimal numbers to the nearest unit, tenth and hundredth | • Numeration<br>• Place value<br>• Expanded notation<br>• Estimation<br>• Comparisons (<, >, =) | • Stating any number expressed in decimal form up to three decimal places<br>• Reading/signing any number expressed in decimal form up to three decimal places<br>• Writing decimals in numerals up to three decimal places | • Number strips<br>• Abacuses<br>• Equivalent fractions charts<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| | | | • Giving the value of a digit in a decimal number with three decimal places<br>• Expressing decimal numbers in expanded notation<br>• Arranging decimal numbers in order of size<br>• Comparing decimal numbers using <, > and = signs<br>• Approximating decimal numbers to the nearest unit, tenth and hundredth | |
| Percentages | • identify percentages<br>• read percentages<br>• write percentages<br>• express fractions as percentages and vice versa | • Numeration<br>• Conversion | • Saying/signing, percentages<br>• Reading percentages<br>• Expressing fractions as percentages and vice versa<br>• Converting quantities to percentages<br>• Discussing the importance of percentages in life | • Fraction charts<br>• Conversion charts<br>• 100- square grids<br>• Calculators<br>• ICT tools |

## 8.18 (GRADE 7) TOPIC 2: OPERATIONS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| • Addition of whole numbers (less than or equal to<br>10 000 000) | • add whole numbers less than or equal to 10 000 000<br>• use associative and commutative law in adding whole numbers | • Addition of whole numbers whose sum is less than or equal to 10 000 000 | • Finding the sum of whole numbers mentally<br>• Adding whole numbers which require carrying up to three times<br>• Using the commutative 3+4=4+3=7 and associative laws for example<br>(3+4) +2= 3+(4+2) = 9 | • Work cards<br>• Abacuses<br>• Number line strips<br>• Counters |
| Subtraction of whole numbers (0 – 10 000 000) | • subtract whole numbers within the range | • Subtraction of whole numbers (0 – 10 000 000) | • Finding differences between whole numbers within the range<br>• Solving life problems involving subtraction | • Abacuses<br>• Work cards<br>• Number line strips<br>• Place value charts |
| Multiplication of whole numbers | • illustrate multiplication using the long and short methods | • Multiplication of whole numbers (whose product is less than 100 000) | • Multiplying whole numbers in the range | • Work cards<br>• Counters |

| | | | | |
|---|---|---|---|---|
| (whose product is less than 100 000) | • multiply numbers by up to three-digit numbers<br>• | | • Multiplying whole numbers by two- or three-digit multipliers with or without carrying | • Multiplication dials |
| • Division of whole numbers (whose dividend is less or equal to 100 000 | • Divide whole numbers by three-digit numbers | • Division of whole numbers whose dividend is less or equal to 100 000 | • Dividing whole numbers where the dividend is not more than 100 000<br>• Dividing by two-digit number | • Counters<br>• Calculators |
| Multiplication of proper fractions and mixed numbers | • multiply any two proper fractions with denominators from 2 to 10<br>• multiply any two mixed numbers with denominators from 2 to 10 | • Multiplication of proper fractions with denominators from 2 to 10<br>• Multiplication of mixed numbers with denominators from 2 to 10 | • Multiplying fractions within the range<br>• Computing multiplication of mixed numbers | • Number line strips<br>• Fraction charts |
| • Highest Common Factor (HCF) of two numbers (where the | • listing factors and multiples of given numbers<br>• find the HCF of two numbers (where the HCF is less than 20)<br>• calculate LCM of two numbers (where the LCM is less than 100) | • Highest Common Factor (HCF) of two numbers<br>• Lowest Common Multiple (LCM) of two numbers | • Listing factors of given numbers<br>• Identify multiples of numbers | • Work cards<br>• Counters |

| | | | | |
|---|---|---|---|---|
| HCF is less than 20)<br>• Lowest Common Multiple (LCM) of two numbers (where the LCM is less than 100) | | | • Deducing HCF of up to two numbers from listed factors<br>• Calculating LCM of two numbers | |
| • Addition of proper fractions<br>• Addition of mixed numbers | • add proper fractions with same denominators<br>• add proper fractions with different denominators<br>• carry out addition of mixed numbers<br>• use the associative and commutative laws to add proper fractions | • Addition of proper fractions with same denominators of 2 to 10 and multiples of 5 up to 100<br>• Addition of proper fractions with different denominators of 2 to 10 and multiples of 5 up to 100<br>• Addition of mixed numbers | • Adding proper fractions with same denominators<br>• Finding the total of proper fractions with different denominators of 2 to 10 and multiples of 5 up to 100<br>• Adding mixed numbers<br>• Demonstrating associativity and commutativity in the addition of fractions and mixed numbers | • Equivalent fractions charts<br>• Blocks<br>• Counters<br>• Rods |

| | | | | |
|---|---|---|---|---|
| • Subtraction of proper fractions<br>• Subtraction of mixed numbers | • subtract proper fractions with same denominators<br>• subtract proper fractions with different denominators<br>• carry out subtraction of mixed numbers | • Subtraction of proper fractions with same denominators of 2 to 10 and multiples of 5 up to 100<br>• Subtraction of fractions with different denominators of 2 to 10 and multiples of 5 up to 100<br>• Subtraction of mixed numbers | • Subtracting proper fractions with same denominators<br>• Subtracting fractions with different denominators of 2 to 10 and multiples of 5 up to 100<br>• Subtracting mixed numbers | • Equivalent fractions charts<br>• Blocks<br>• Counters<br>• Rods |
| Addition of decimals up to three decimal places | • add decimals up to three decimal places | • Addition of decimals up to three decimal places | • Finding the sum of decimals<br>• Adding decimals up to 6 digits and up to 3 decimal places | • Abacuses<br>• Work cards |
| Subtraction of decimals up to three decimal places | • subtract decimals up to three decimal places | Subtraction of decimals up to three decimal places | • Subtracting decimals up to 6 digits and up to 3 decimal places<br>• Solving life problems involving subtraction of decimals. | • Abacuses<br>• Work cards<br>• Number lines |
| Multiplication of decimal numbers | • multiply decimal numbers up to 3 decimal places | Multiplication of decimal numbers up to 3 decimal places (where the multiplicand is a 3-digit | • Multiplying decimals up to 3 decimal places | • Abacuses<br>• Work cards |

| | | | | |
|---|---|---|---|---|
| | | number of up to 2 decimal places and the multiplier is a 2-digit number of up to 1 decimal place) | | • Flash cards |
| Division of decimal numbers by decimals (up to 3 decimal places) | • divide decimal numbers by decimal numbers up to 3 decimal places | Division of decimal numbers by decimals up to 3 decimal places | • Dividing decimals by decimal numbers up to 3 decimal places<br>• Dividing decimal numbers up to 3 decimal places using the long method | • Abacuses<br>• Work cards<br>• Flash cards |
| Combined operations (up to 3 operations) | • solve up to 3 combined operations using the law of precedence | Combined operations (up to 3 operations) | • Carrying out up to 3 combined operations involving addition, subtraction, multiplication and division<br>• Solving life problems involving combined operations<br>**NB use law of precedence that is multiplication and division are carried out before addition and subtraction** | • Work cards<br>• Counters |

## 8.19 (GRADE 7) TOPIC 3: MEASURES

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| Money | • work out change<br>• prepare invoices correctly<br>• calculate profit or loss<br>• calculate exchange rate<br>• solve financial transactions<br>• prepare simple personal and household budgets | • Notes and coins up to $500<br>• Conversions<br>• Financial transactions<br>-Banking transactions<br>-Hire purchase<br>-Buying and selling (profit, loss, interest, discount) | • Visiting shops and noting prices<br>• Preparing invoices<br>• Calculating change<br>• Finding exchange rate<br>• Comparing the buying price and the selling price to determine the profit or loss<br>• Finding the profit or loss using the buying price and the selling price<br>• Interpreting statements of accounts which contain details of withdrawals, deposits, interest and balance<br>• Role playing on buying and selling<br>• Discussing the importance of profit and loss in real life situations<br>• Drawing up simple household and personal budgets. | • Invoices<br>• Corner store/shops<br>• Money<br>• Charts on buying and selling<br>• Receipts<br>• Models of tills<br>• ICT tools<br>• Deposit slips<br>• Withdrawal slips<br>• Hire purchase statements<br>• Statements of accounts |
| Time | • calculate time taken<br>• express and write time in 12- and 24-hour notation<br>• write dates in Standard International (SI) notation | • Operations on time 24- hour and 12-hour notation<br>• Standard International notation | • Relating time calculations to practical situations such as finding duration of time | • Watches<br>• Digital clock<br>• Calendars<br>• 12- and 24-hour Clock faces |

| | | | | |
|---|---|---|---|---|
| | • add and subtract time units | | • Calculating the number of days in given months in either ordinary year or leap year<br>• Increasing and decreasing time units<br>• Writing dates in SI notation, such as: 2024 – 09 - 22 | • Sun-dials |
| Mass (up to 1 000kg ) | • change grammes to kilogrammes and vice-versa<br>• measure mass of quantities to the nearest 1 000kg<br>• solve problems involving gross, net and tare mass | • Conversion of mass up to 1 000kg<br>• Rounding off of mass<br>• Gross, net and tare mass | • Changing one unit of measurement to another such as grammes, kilogrammes, tonnes and vice-versa<br>• Determining the mass of quantities to the nearest 1 000kg<br>• Differentiating the terms net, tare and gross mass<br>• Solving problems involving gross, net and tare mass<br>• Discussing the importance of mass in real life situations | • Objects<br>• Measuring scales<br>• ICT tools<br>• Balances<br>• Empty containers |
| Length (standard units up to a kilometre) | • measure length using standard units<br>• find length and distance in metres and kilometres | • Measurement of length using standard units up to a kilometre | • Measuring distances up to 1km using standard units<br>• Solving problems involving length in real life situations | • 30cm rules<br>• 1m rules<br>• ICT tools<br>• Tape measure |
| Shapes<br>2 and 3 dimensional | • identify 2 and 3 dimensional shapes<br>• list properties of 2 and 3 dimensional shapes<br>• construct models of 3 dimensional shapes<br>• state parts of a circle | • Shapes: 2 and 3 dimensional<br>• Parts of a circle:<br>-centre<br>-diameter<br>-radius | • Classifying and naming 2 and 3 dimensional shapes<br>• Naming the properties of 2 and 3 dimensional shapes<br>• Making models of solid shapes | • 2 and 3 dimensional shapes<br>• Physical structures of plane and solid shapes and models<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| | | -chord<br>-arc<br>-semi-circle | • Identifying a combination of shapes in physical structures<br>• Drawing the circle showing its parts | • Charts showing parts of a circle<br>• Objects in the immediate environment (including the natural environment)<br>• Pictures |
| Perimeter of plane shapes (up to 10 sides) | • measure the distance around a shape<br>• calculate perimeter of shapes | • Perimeter of plane shapes (up to 10 sides) | • Finding perimeter of shapes by: a) Measuring<br>d) By adding the sides<br>e) Using the formulae:<br>- Perimeter of rectangle = 2(Length + Width) and Perimeter of Square = 4 x Side<br>• Measuring furniture<br>• Measuring boundaries in their local communities including the sports grounds<br>• Solving problems involving perimeter | • Rectangular shapes<br>• Square shapes<br>• ICT tools<br>• Rulers<br>• Tape measures<br>• Click wheel<br>• Local environment |
| Rate<br>- Distance<br>- Speed<br>- Time | • relate distance, speed and time<br>• calculate distance, speed and time<br>• calculate different types of rate<br>• apply rate to solve problems | • Rate:<br>- Distance<br>- Speed<br>- Time | • Recording time taken to cover stipulated distances<br>• Using formulae to calculate speed, distance and time<br>• Solving problems involving rate | • Speedometers<br>• ICT tools<br>• Pendulums<br>• Watches<br>• Click wheels |
| • Area:<br>units of area up to a hectare<br>• Area of: | • identify units of area<br>• calculate area of square, rectangle and triangle using formulae<br>• calculate area of composite shapes | • Area:<br>- units of area up to a hectare<br>• Area of:<br>- rectangle, | • Choosing appropriate units for measuring area<br>• Finding area of square, rectangle, triangle and | • Metre rules<br>• Metre sticks<br>• Tape measure<br>• ICT tools |

| | | | | |
|---|---|---|---|---|
| - rectangle,<br>-square,<br>-triangle,<br>-combined<br>-irregular shapes | • calculate area in square metres, ares and hectares | - square,<br>- triangle,<br>- combined and irregular shapes | composite shapes using units of measure<br>• Calculating area in square metres, ares and hectares | • Pictures of plane shapes<br>• Objects in the environment<br>• Garden<br>• Field<br>• Plots<br>• Tiles |
| Volume and capacity | • state units of capacity and volume<br>• use units of capacity and volume<br>• measure capacity and volume<br>• compute volume up to a cubic metre | • Volume and capacity: up to a cubic metre<br>• Units of volume<br>• Calculation of volume | • Relating and using the following conversions:<br>- 1 000ml = 1litre<br>- 1 000$cm^3$ = 1litre<br>- 1$cm^3$ = 1ml<br>- 1$m^3$ = 1000litres<br>• Deriving and using the formula: (Volume = Base Area x Height)<br>• Solving life problems involving volume and capacity | • Cubes<br>• Rectangular prisms<br>• Sand<br>• Water<br>• Containers<br>• ICT tools |
| Direction, angles and lines: including acute, obtuse, right, straight, reflex angles and complete revolution | • show direction of points from a reference point<br>• identify types of angles<br>• name types of angles<br>• calculate missing angles<br>• convert fractions of revolutions to degrees0 | • Direction, angles and lines: including acute, obtuse, right, straight, reflex angles and complete revolution | • Giving direction of points from a reference point<br>• Drawing and naming different types of angles<br>• Deducing that interior angles of rectangles add up to four right angles (360 degrees) and those of a triangle add up to 180 degrees. | • Geometrical instruments<br>• Clock faces<br>• Diagrams showing directions<br>• Lines on Charts with angles<br>• Compass points<br>• ICT tools<br>• Bicycle rims<br>• Tyres |

| | | | | |
|---|---|---|---|---|
| | | | • Dividing a square and a rectangle diagonally to make right angled triangles<br>• Converting fractions of revolution to degrees | |

## 8.20 (GRADE 7) TOPIC: RELATIONSHIPS

| SUB TOPIC | OBJECTIVES<br>Pupils should be able to: | CONTENT<br>(knowledge, skills, values and attitudes) | SUGGESTED NOTES AND ACTIVITIES | SUGGESTED RESOURCES |
|---|---|---|---|---|
| • Data handling | • collect statistical data<br>• read and interpret data from ready reckoners such as:<br>- Tables<br>- Bar graphs<br>- Column graphs<br>- Pie charts<br>- Pictographs<br>- Jagged line graphs<br>• use statistical graphs in life situations | • Tables<br>• Bar graphs<br>• Column graphs<br>• Pie charts<br>• Jagged line graphs<br>• Pictographs | • Interpreting data from various sources<br>• Collecting data from the community in groups, for example demographic data, data on access to health facilities<br>• Recording information collected using tables<br>• Solving life problems using information from statistical diagrams<br>• Researching on topical issues within their communities | • Print media<br>• Timetables<br>• Charts<br>• Graphs<br>• Electronic devices<br>• Rock paintings<br>• Distance tables<br>• Graph papers<br>• Fare tables |

| | | | | |
|---|---|---|---|---|
| | | | • Educational tours to heritage sites to observe rock paintings<br>**NB: Conducting simple investigations involving statistical data from life situations such as population, examination results, health issues and historical events.** | |

# 9 ASSESSMENT

The mathematics learning area syllabus for Grade 3 to 7 shall be assessed through School Based Continuous Assessment (SBCA) and Summative Assessment (SA). These assessments shall be guided by the principles of inclusivity, practicability, authenticity, transparency, flexibility, validity and reliability. The principles are crucial for creating a supportive and effective learning environment that fosters growth and development in learners at secondary school level. Arrangements, accommodations and modifications shall be visible to enable candidates with special needs to access assessments.

This section covers the assessment objectives, the assessment model, the scheme of assessment, and the specification grid.

## 9.1 Assessment Objectives

Learners shall be assessed on their ability to:

9.1.1 recall mathematical terms

9.1.2 recognise mathematical terms

9.1.3 use mathematical terms, symbols and language

9.1.4 estimate quantities and measures to a degree of accuracy

9.1.5 calculate to the given degree of accuracy

9.1.6 solve mathematical problems

9.1.7 demonstrate problem solving abilities in mathematics

9.1.8 apply mathematical concepts, skills and techniques in context

9.1.9 explore mathematical ideas and come up with conclusions

9.1.10 interpret ready reckoners, tables, pie charts and graphs

9.1.11 analyse tables, charts, graphs and use them in conducting simple investigations

## 9.2 Assessment Model

Figure 1 shows the assessment model that shall be followed for both school and ZIMSEC assessments. Assessment of learners shall be both Continuous and Summative. School Based Continuous Assessment shall include recorded activities from the School Based Projects done by the learners. The mark shall be included on learners' end of term and year reports. Summative assessment at school level shall include terminal examinations which are at the end of the term and year.

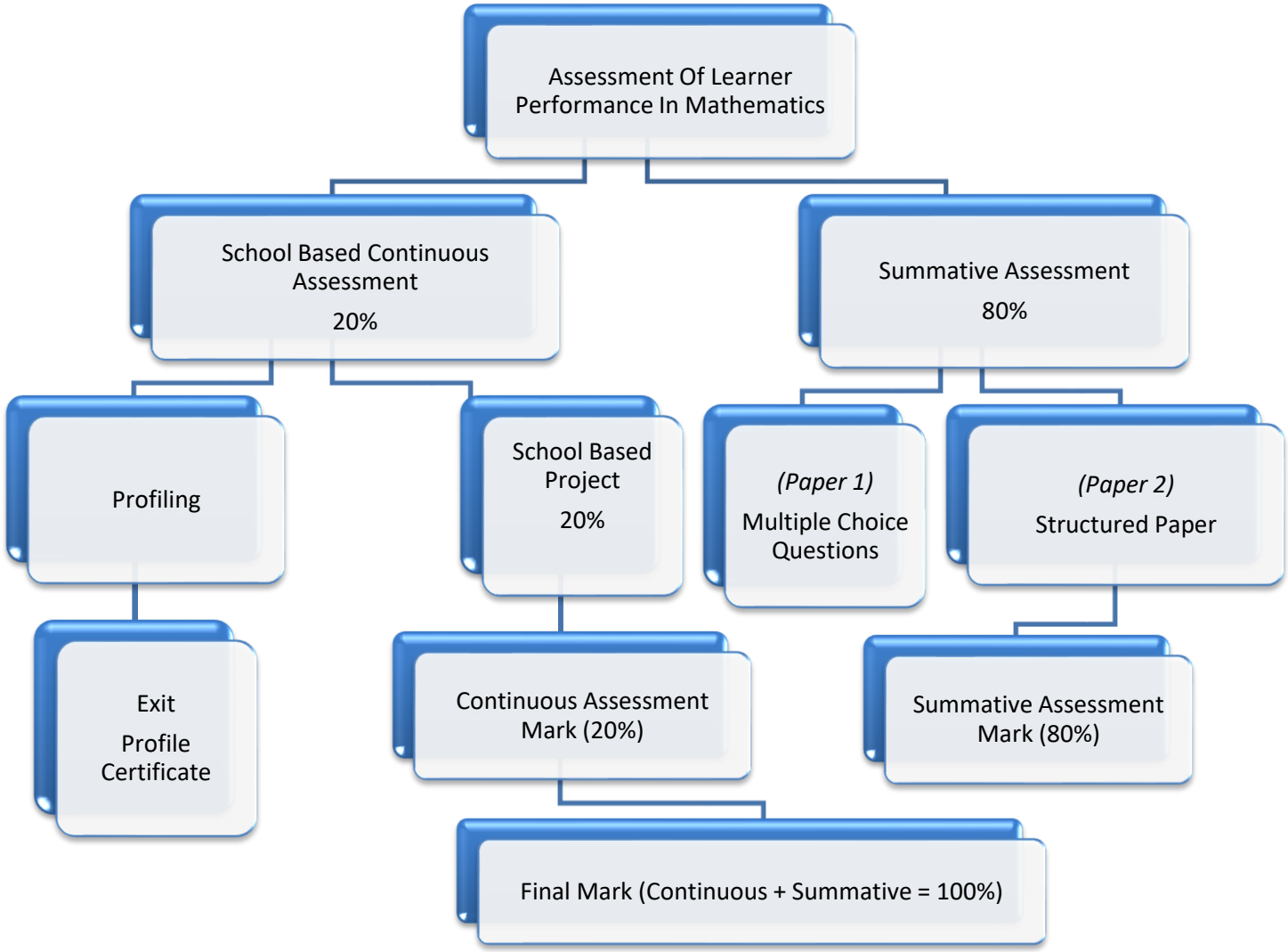



*Fig. 1 Assessment Model*

In addition, learners shall be profiled and learner profile records established. Learner profile certificates shall be issued for checkpoints assessment in schools. The aspects to be profiled shall include learner's prior knowledge, values and skills, and subsequently the new competences acquired at any given point.

## 9.3 Scheme of Assessment

The Assessment Model shows that learners shall be assessed using both School Based Continuous Assessment and Summative Assessment for both School and ZIMSEC assessments.

The table shows the Scheme of Assessment where 20% is allocated to School Based Continuous Assessment and 80% to School or ZIMSEC Summative Assessment.

| FORM OF ASSESSMENT | WEIGHTING |
|---|---|
| **School Based Continuous Assessment** | **20%** |
| **Summative Assessment** | **80%** |
| **Total** | **100%** |

### 9.3.1 Description of School Based Continuous Assessment

Learners shall do one school-based project per grade which contributes to 20% of the end of year final mark. The end of year summative assessment shall then contribute 80%. However, for ZIMSEC public examinations, two (2) school - based projects shall be considered as School Based Continuous Assessment at Grade 7. The two School Based Projects shall include those done during Grade 6 and Grade 7 sessions. Each will contribute 10%.

#### 9.3.1.1: School – Based Project Continuous Assessment Scheme

Table 1 shows the Learning and Assessment Scheme for the School Based Project.

*Table 1 showing Assessment Scheme for Project execution*

| Project Execution Stages | Project Stage Description | Timelines | Marks |
|---|---|---|---|
| **1** | Problem Identification | January | 5 |
| **2** | Investigation of related ideas to the problem/innovation | February | 10 |
| **3** | Generation of possible solutions | March | 10 |
| **4** | Selecting the most suitable solution | April-May | 5 |
| **5** | Refinement of selected solution | June | 5 |
| **6** | Presentation of the final solution | July | 10 |
| **7** | Evaluation of the solution and Recommendations | August-September | 5 |
| **TOTAL** | | | **50** |

The assessment scheme shows the stages that shall be executed by pupils and the timeline at which each stage shall be carried out. Possible marks, totalling 50, are highlighted to indicate how much can be allocated.

### 9.3.2 Description of the ZIMSEC Summative Assessment

ZIMSEC Summative Assessment shall be a public examination at Grade 7. The examination shall consist of two (2) papers.

The skills derived from each paper are as follows:

| Skill | Paper 1 | Paper 2 |
|---|---|---|
| Knowledge and comprehension | 50% | 50% |
| Application and Analysis | 40% | 40% |

| | | |
|---|---|---|
| Problem solving | 10% | 10% |
| **TOTAL** | **100%** | **100%** |

## 9.4 Description of the papers

| Paper | Description | Duration | Marks | Paper Weighting % | Weighting % |
|---|---|---|---|---|---|
| 1 | 40 Multiple Choice Questions | 2 hours | 40 | 50 | 80 |
| 2 | Structured Questions | 2 hours | 40 | 30 | |

**Paper 1 (40 marks)**

There are 40 questions and Candidates are expected to answer all questions.

**Paper 2 (40 marks)**

Comprises sections **A** and **B.**

**Section A** will consist approximately 10 structured questions. Candidates must answer all questions. The total for this section is 25 marks.

**Section B** will consist of 6 structured questions worth 5 marks each. Candidates must choose and answer 3 questions. The total for this section is 15 marks.

### 9.5 Specification grid

**Paper 1**

| Topic | Skill 1 | Skill 2 | Skill 3 | Total |
|---|---|---|---|---|
| Number | 5 | 3 | 3 | 11 |
| Operations | 5 | 3 | 3 | 11 |

| | | | | |
|---|---|---|---|---|
| Measures | 4 | 3 | 3 | 10 |
| Relationships | 4 | 2 | 2 | 8 |
| **Total** | **18** | **11** | **11** | **40** |

**Paper 2**

| **Topic** | **Skill 1** | **Skill 2** | **Skill 3** | **Total** |
|---|---|---|---|---|
| **Section A** | | | | |
| Number | 3 | 2 | 2 | 7 |
| Operations | 3 | 2 | 2 | 7 |
| Measures | 3 | 2 | 2 | 7 |
| Relationships | 2 | 1 | 1 | 4 |
| **Section B** | | | | |
| Number | 0 | 4 | 0 | 4 |
| Operations | 0 | 0 | 4 | 4 |
| Measures | 4 | 0 | 0 | 4 |
| Relationships | 3 | 0 | 0 | 3 |
| **Total** | **18** | **11** | **15** | **40** |

## 9.5 Assessment Instruments/Tools:

**The following are suggested tools**

- Check list
- Observation schedules
- Tests
- Rating Scale
- Exercises

- Practical activities
- School based projects
- Profiling Portfolio