CURRICULUM AND ASSESSMENT POLICY STATEMENT (CAPS)

MATHEMATICS – INTERMEDIATE PHASE

FINAL DRAFT
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1.1. Background

The National Curriculum Statement Grades R – 12 (NCS) stipulates policy on curriculum and assessment in the schooling sector.

To improve its implementation, the National Curriculum Statement was amended, with the amendments coming into effect in January 2011. A single comprehensive Curriculum and Assessment Policy document was developed for each subject to replace the old Subject Statements, Learning Programme Guidelines and Subject Assessment Guidelines in Grades R - 12.


1.2. Overview

1.2.1. The National Curriculum Statement Grades R – 12 (January 2011) represents a policy statement for learning and teaching in South African schools and comprises the following:

(a) Curriculum and Assessment Policy documents for each approved school subject as listed in the policy document National Intermediate Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF); and


1.2.2. The National Curriculum Statement Grades R – 12 (January 2011) should be read in conjunction with the following documents:

(a) An addendum to the policy document, the National Intermediate Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF), regarding the National Protocol for Assessment Grade R – 12, published in the Government Gazette, No. 29467 of 11 December 2006; and

1.2.3. The Subject Statements, Learning Programme Guidelines and Subject Assessment Guidelines for Grades R - 9 and Grades 10 - 12 are repealed and replaced by the *Curriculum and Assessment Policy documents for Grades R – 12 (January 2011)*.

1.2.4. The sections on the Curriculum and Assessment Policy as contemplated in Chapters 2, 3 and 4 of this document constitute the norms and standards of the *National Curriculum Statement Grades R – 12* and therefore, in terms of section 6A of the *South African Schools Act, 1996 (Act No. 84 of 1996)*, form the basis for the Minister of Basic Education to determine minimum outcomes and standards, as well as the processes and procedures for the assessment of learner achievement to be applicable to public and independent schools.

1.3. General aims of the South African Curriculum

1.3.1. The *National Curriculum Statement Grades R - 12* gives expression to what is regarded to be knowledge, skills and values worth learning. It will ensure that learners acquire and apply knowledge and skills in ways that are meaningful to their own lives. In this regard, the curriculum promotes the idea of grounding knowledge in local contexts, while being sensitive to global imperatives.

1.3.2. The National Curriculum Statement Grades R - 12 serves the purposes of:

(a) equipping learners, irrespective of their socio-economic background, race, gender, physical ability or intellectual ability, with the knowledge, skills and values necessary for self-fulfilment, and meaningful participation in society as citizens of a free country;
(b) providing access to higher education;
(c) facilitating the transition of learners from education institutions to the workplace; and
(d) providing employers with a sufficient profile of a learner's competences.

1.3.3. The National Curriculum Statement Grades R - 12 is based on the following principles:

(a) **Social transformation**: ensuring that the educational imbalances of the past are redressed, and that equal educational opportunities are provided for all sections of our population;
(b) **Active and critical learning**: encouraging an active and critical approach to learning, rather than rote and uncritical learning of given truths;
(c) **High knowledge and high skills**: the minimum standards of knowledge and skills to be achieved at each grade are specified and sets high, achievable standards in all subjects;
(d) **Progression**: content and context of each grade shows progression from simple to complex;
(e) **Human rights, inclusivity, environmental and social justice**: infusing the principles and practices of social and environmental justice and human rights as defined in the Constitution of the Republic of South Africa. The National Curriculum Statement Grades 10 – 12 (General) is sensitive to issues of diversity such as poverty, inequality, race, gender, language, age, disability and other factors;

(f) **Valuing indigenous knowledge systems**: acknowledging the rich history and heritage of this country as important contributors to nurturing the values contained in the Constitution; and

(g) **Credibility, quality and efficiency**: providing an education that is comparable in quality, breadth and depth to those of other countries.

1.3.4. The National Curriculum Statement Grades R - 12 aims to produce learners that are able to:

(a) identify and solve problems and make decisions using critical and creative thinking;

(b) work effectively as individuals and with others as members of a team;

(c) organise and manage themselves and their activities responsibly and effectively;

(d) collect, analyse, organise and critically evaluate information;

(e) communicate effectively using visual, symbolic and/or language skills in various modes;

(f) use science and technology effectively and critically showing responsibility towards the environment and the health of others; and

(g) demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

1.3.5. Inclusivity should become a central part of the organisation, planning and teaching at each school. This can only happen if all teachers have a sound understanding of how to recognise and address barriers to learning, and how to plan for diversity.
1.4. Time Allocation

1.4.1. Foundation Phase

(a) The instructional time for subjects in the Foundation Phase is as indicated in the table below:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Time allocation per week (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Home Language</td>
<td>6</td>
</tr>
<tr>
<td>ii. First Additional Language</td>
<td>4 (5)</td>
</tr>
<tr>
<td>iii. Mathematics</td>
<td>7</td>
</tr>
<tr>
<td>iv. Life Skills</td>
<td></td>
</tr>
<tr>
<td>• Beginning Knowledge</td>
<td>1 (2)</td>
</tr>
<tr>
<td>• Arts and Craft</td>
<td>2</td>
</tr>
<tr>
<td>• Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>• Health Education</td>
<td>1</td>
</tr>
</tbody>
</table>

(b) Instructional time for Grades R, 1 and 2 is 23 hours. For Grade 3, First Additional Language is allocated 5 hours and Beginning Knowledge is allocated 2 hours as indicated by the hours in brackets in the table above.

1.4.2. Intermediate Phase

(a) The table below shows the subjects and instructional times in the Intermediate Phase.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Time allocation per week (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Home Language</td>
<td>6</td>
</tr>
<tr>
<td>ii. First Additional Language</td>
<td>5</td>
</tr>
<tr>
<td>iii. Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>iv. Science and Technology</td>
<td>3.5</td>
</tr>
<tr>
<td>v. Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>vi. Life Skills</td>
<td></td>
</tr>
<tr>
<td>• Creative Arts</td>
<td>1.5</td>
</tr>
<tr>
<td>• Physical Education</td>
<td>1.5</td>
</tr>
<tr>
<td>• Religion Studies</td>
<td>1</td>
</tr>
</tbody>
</table>
1.4.3. Intermediate Phase

The instructional time in the Intermediate Phase is as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Time allocation per week (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Home Language</td>
<td>5</td>
</tr>
<tr>
<td>ii. First Additional Language</td>
<td>4</td>
</tr>
<tr>
<td>iii. Mathematics</td>
<td>4.5</td>
</tr>
<tr>
<td>iv. Natural Sciences</td>
<td>3</td>
</tr>
<tr>
<td>v. Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>vi. Technology</td>
<td>2</td>
</tr>
<tr>
<td>vii. Economic Management Sciences</td>
<td>2</td>
</tr>
<tr>
<td>viii. Life Orientation</td>
<td>2</td>
</tr>
<tr>
<td>ix. Arts and Culture</td>
<td>2</td>
</tr>
</tbody>
</table>

1.4.4. Grades 10-12

The instructional time in Grades 10-12 is as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Time allocation per week (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Home Language</td>
<td>4.5</td>
</tr>
<tr>
<td>ii. First Additional Language</td>
<td>4.5</td>
</tr>
<tr>
<td>iii. Mathematics</td>
<td>4.5</td>
</tr>
<tr>
<td>iv. Life Orientation</td>
<td>2</td>
</tr>
<tr>
<td>v. Three Electives</td>
<td>12 (3x4h)</td>
</tr>
</tbody>
</table>

The allocated time per week may be utilized only for the minimum required NCS subjects as specified above, and may not be used for any additional subjects added to the list of minimum subjects. Should a learner wish to offer additional subjects, additional time must be allocated for the offering of these subjects.
2.1. What is Mathematics?

Mathematics is a language that makes use of symbols and notations for describing numerical, geometric and graphical relationships. It is a human activity that involves observing, representing and investigating patterns and qualitative relationships in physical and social phenomena and between mathematical objects themselves. It helps to develop mental processes that enhance logical and critical thinking, accuracy and problem solving that will contribute in decision-making.

2.2. Specific Aims

The teaching and learning of Mathematics aims to develop the following in the learner:
- a critical awareness of how mathematical relationships are used in social, environmental, cultural and economic relations;
- confidence and competence to deal with any mathematical situation without being hindered by a fear of Mathematics;
- an appreciation for the beauty and elegance of Mathematics;
- a spirit of curiosity and a love for Mathematics;
- recognition that Mathematics is a creative part of human activity;
- deep conceptual understandings in order to make sense of Mathematics; and
- acquisition of specific knowledge and skills necessary for:
  - the application of Mathematics to physical, social and mathematical problems,
  - the study of related subject matter (e.g. other subjects), and
  - further study in Mathematics.

2.3. Overview of content topics

2.3.1. What content knowledge will be learnt by a Intermediate Phase Mathematics learner?

Mathematics in the Intermediate Phase covers five main content areas. Each content area contributes towards the acquisition of the skills specific skills. The table below shows the general content areas of each topic as well as the specific content for grade 4 to 6. The skills which Intermediate Phase learners are required to demonstrate are also included in the next table below.
<table>
<thead>
<tr>
<th>Content Area</th>
<th>General content focus</th>
<th>Intermediate Phase specific content focus</th>
</tr>
</thead>
</table>
| 1. Numbers, Operations and Relationships        | Development of number sense that includes:  
  • the meaning of different kinds of numbers;  
  • relationship between different kinds of numbers;  
  • the relative size of different numbers;  
  • representation of numbers in various ways; and  
  • the effect of operating with numbers. | • The range of numbers developed by the end of Intermediate Phase is extended to at least 9-digit whole numbers, decimal fractions to at least 2 decimal places, common fractions and fractions written in percentage form.  
  • In this phase, the learner is expected to move from counting reliably to calculating fluently with all four operations. The learner should be encouraged to memorise multiplication fluently, and sharpen mental calculation skills.  
  • Attention needs to be focused on understanding the concept of place value so that the learner develops a sense of large numbers and decimal fractions.  
  • The learner should recognise and describe properties of numbers and operations, including identity properties, factors, multiples, and commutative, associative and distributive properties. |
| 2. Patterns, Functions and Algebra              | Algebra is the language for investigating and communicating most of Mathematics and can be extended to the study of functions and other relationships between variables. A central part of this content area is for the learner to achieve efficient manipulative skills in the use of algebra. It also focuses on the:  
  • description of patterns and relationships through the use of symbolic expressions, graphs and tables; and  
  • identification and analysis of regularities and change in patterns, and relationships that enable learners to make predictions and solve problems. | • Numeric and geometric patterns are extended with a special focus on the relationships:  
  o between terms in a sequence; and  
  o between the number of the term (its place in the sequence) and the term itself.  
  • The study of numeric and geometric patterns develops the concepts of variable, relationship and function. The understanding of these relationships by the learners will enable them to describe the rules generating the patterns.  
  • This phase has a particular focus on the use of different, yet equivalent, representations to describe problems or relationships by means of flow diagrams, tables, number sentences or verbally. |
| 3. Space and Shape (Geometry)                   | The study of Space and Shape improves understanding and appreciation of the pattern, precision, achievement and beauty in natural and cultural forms. It focuses on the properties, relationships, orientations, positions and transformations of two-dimensional shapes and three-dimensional objects. | • The learner’s experience of space and shape in this phase moves from recognition and simple description to classification and more detailed description of features and properties of two-dimensional shapes and three-dimensional objects.  
  • Learners should be given opportunities to:  
    o draw two-dimensional shapes and make models of three-dimensional objects; and  
    o describe location, transformations and symmetry. |
| 4. Measurement                                  | Measurement focuses on the selection and use of appropriate units, instruments and formulae to quantify characteristics of events, shapes, objects and the environment. It relates directly to the learner’s scientific, technological and economic worlds, enabling the learner to:  
  • make sensible estimates; and  
  • be alert to the reasonableness of measurements and results. | • Learners should be introduced to the use of standardised units of measurement and appropriate instruments for measuring. They should be able to estimate and verify results through accurate measurement.  
  • Learners should be exposed to a variety of measurement activities that will make it possible to select and convert between appropriate units of measurement and to use common fractions and decimals in context.  
  • Measurement in this phase should also enable the learner to:  
    o informally measure angles, area, perimeter and capacity/volume; and  
    o discuss and describe the historical development of measuring instruments and tools. |
| 5. Data handling                                | Through the study of data handling, the learner develops the skills to collect, organise, display, analyse and interpret this information. The study of chance enables the learner to develop skills and techniques for making informed choices, and coping with randomness and uncertainty. | • Data handling in the Intermediate Phase focuses on the skills to gather and summarise data so that they can be interpreted and predictions made from them.  
  • The study of chance (probability) develops awareness that:  
    o different situations have different probabilities of occurring; and  
    o for many situations there are a finite number of different possible outcomes.  
  • In this phase, the learner is not expected to calculate the probability of events occurring. |
2.3.2. Weighting of content areas

The weighting of mathematics content areas serves two primary purposes: firstly the weighting gives guidance on the amount of time needed to adequately address the content within each content area; secondly the weighting gives guidance on the spread of content in the examination (especially end of the year summative assessment).

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number, Operations and Relations</td>
<td>40%</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Patterns, Functions and Algebra</td>
<td>15%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Space and Shape (Geometry)</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Measurement</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Data handling (Statistics)</td>
<td>10%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

2.3.3. Overview of content areas and topics to show progression

The primary purpose of the overview of content topics is to show progression in terms of content and skills from grade R to 12. The transition between the phases was considered to minimise the content gaps and ensure smooth content flow (where necessary). In trying to ensure seamlessness in Mathematics content, few changes became unavoidable. This is mainly the case in the grades that start a new phase (excluding grade R) and those that are the exit points in the phase.

The following critical aspects should be noted to avoid possible confusion in the contents of the overview:

Certain content topics and skills are similar in two or three successive grades. This does NOT always mean that similar content should be taught in the affected grades. In instances where content is similar in two or more successive grades in the Content Overview, progression of content is indicated in the content outline (Chapter 3). The overview (Chapter 2) should therefore be read in conjunction with the content outline (Chapter 3).
### 1. Numbers, Operations and Relationships

<table>
<thead>
<tr>
<th>CONTENT</th>
<th>GRADE 4</th>
<th>GRADE 5</th>
<th>GRADE 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. Whole numbers</td>
<td>4.1.1.1. Count forwards and backwards in 2s, 3s, 5s, 10, 25, 50, 100) between 0 and at least 10,000.</td>
<td>5.1.1.1. Count forwards and backwards in whole number intervals up to at least 10,000.</td>
<td>6.1.1.1. Count forwards and backwards in decimals</td>
</tr>
<tr>
<td>1.1.2. Order, compare and represent numbers to at least 4-digit numbers.</td>
<td>5.1.1.2. Order, compare and represent numbers to at least 6-digit numbers.</td>
<td>6.1.1.2. Order, compare and represent numbers at least 9-digit numbers</td>
<td></td>
</tr>
<tr>
<td>1.1.3. Represent odd and even numbers to at least 1000.</td>
<td>5.1.1.3. Represent odd and even numbers to at least 1000.</td>
<td>6.1.1.3. Represent prime numbers to at least 100</td>
<td></td>
</tr>
<tr>
<td>1.1.4. Recognize the place value of digits in whole numbers to at least 4-digit numbers.</td>
<td>5.1.1.4. Add, subtract, multiply and divide whole numbers.</td>
<td>6.1.1.4. Add, subtract, multiply and divide whole numbers.</td>
<td></td>
</tr>
<tr>
<td>1.1.5. Rounding off to the nearest 10, 100 or 1000.</td>
<td>5.1.1.5. Recognise the place value to at least 6 digit numbers.</td>
<td>6.1.1.5. Recognising the place value of digits in whole numbers to at least 9-digit numbers</td>
<td></td>
</tr>
<tr>
<td>1.1.6. Multiplication of at least whole 2-digit by 2-digit numbers.</td>
<td>5.1.1.6. Multiplication of at least whole 3-digit by 2-digit numbers.</td>
<td>6.1.1.6. Rounding off to the nearest 5, 10, 100 or 1000</td>
<td></td>
</tr>
<tr>
<td>1.1.7. Division of at least whole 3-digit by 1-digit numbers.</td>
<td>5.1.1.7. Division of at least whole 3-digit by 2-digit numbers.</td>
<td>6.1.1.7. Addition and subtraction of whole numbers</td>
<td></td>
</tr>
<tr>
<td>1.1.8. Using a range of techniques to perform written and mental calculations with whole numbers including:</td>
<td>5.1.1.8. Using a range of techniques to perform written and mental calculations with whole numbers including:</td>
<td>6.1.1.8. Multiplication of at least whole 4-digit by 3-digit numbers</td>
<td></td>
</tr>
<tr>
<td>- building up and breaking down numbers</td>
<td>- Adding and subtracting in columns</td>
<td>6.1.1.9. Division of at least whole 4-digit by 3-digit numbers</td>
<td></td>
</tr>
<tr>
<td>- rounding off and compensating</td>
<td>- building up and breaking down numbers and using a number line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- doubling and halving</td>
<td>- rounding off and compensating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- using a number line</td>
<td>- doubling and halving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.11. Mental calculations involving:</td>
<td>5.1.1.10. Mental calculations involving:</td>
<td>6.1.1.11. Mental calculations involving:</td>
<td></td>
</tr>
<tr>
<td>- Addition and subtraction</td>
<td>- addition and subtraction</td>
<td>- addition and subtraction</td>
<td></td>
</tr>
<tr>
<td>- Multiplication of whole numbers to at least 10×10</td>
<td>- multiplication of whole numbers to at least 10×10</td>
<td>- multiplication of whole numbers to at least 12×12</td>
<td></td>
</tr>
<tr>
<td>- Reciprocal relationship between multiplication and division</td>
<td>- Reciprocal relationship between multiplication and division</td>
<td>- Divisibility rules for 2, 5, 10, 100, 1000</td>
<td></td>
</tr>
<tr>
<td>1.2. Fractions</td>
<td>5.1.2.1. Common Fractions</td>
<td>6.1.2.1. Common Fractions</td>
<td></td>
</tr>
<tr>
<td>4.2.1. Common Fractions</td>
<td>- Describing and comparing common fractions with different denominators from 2 to 8</td>
<td>- Describing and comparing common fractions (tenth and hundredths)</td>
<td></td>
</tr>
<tr>
<td>- Describing and comparing common fractions in diagrammatic form</td>
<td>- Addition and subtraction of common fractions with same denominator</td>
<td>- Addition and subtraction of common fractions (denominators which are multiples of each other)</td>
<td></td>
</tr>
<tr>
<td>- Addition of common fractions with same denominators</td>
<td>- Addition and subtraction of mixed fractions</td>
<td>- Addition and subtraction of mixed fractions</td>
<td></td>
</tr>
<tr>
<td>- Equal sharing with remainders</td>
<td>- Fractions of whole numbers which result in whole numbers</td>
<td>- Fractions of whole numbers</td>
<td></td>
</tr>
<tr>
<td>- Recognising, describing and using the equivalence of division and fractions</td>
<td>- Count forwards and backwards in fractions</td>
<td>- Problem-solving involving common fractions</td>
<td></td>
</tr>
<tr>
<td>- Problem-solving involving common fractions</td>
<td>- Recognising, describing and using the equivalence of division and fractions</td>
<td>- Problem-solving involving common fractions</td>
<td></td>
</tr>
</tbody>
</table>
### 4.1.2.2. Decimals
- Describing and comparing decimal fractions of the form 0.5, 1.5 and 2.5 etc in the context of measurement.
- Problem-solving involving decimals

### 4.1.2.3. Equivalent forms:
- Recognising and using equivalent forms (denominators which are multiples of each other)
- Recognising and using equivalent forms decimal fractions of the form 0.5, 1.5 and 2.5 etc in the context of measurement.

### 5.1.2.2. Decimals
- Problem-solving involving common fractions
- Describing and comparing decimal fractions of the form 0.5, 1.5 and 2.5 etc in the context of measurement.
- Problem-solving involving decimals

### 5.1.2.3. Equivalent forms:
- Recognising and using equivalent forms (denominators which are multiples of each other)
- Recognising and using equivalent forms decimal fractions of the form 0.5, 1.5 and 2.5 etc in the context of measurement.

### 6.1.2.2. Decimals
- Describing and comparing decimal to at least two decimal places
- Place value of digits in at least two decimal places
- Addition and subtraction of positive decimals with at least two decimal places
- Count forwards and backwards in decimals
- Problem-solving involving decimals

### 6.1.2.3. Equivalent forms:
- Recognising and using equivalent forms of common fractions with 1-digit or 2-digit denominators
- Equivalent forms of decimal fractions to at least two decimal places
- Equivalent forms of percentages
- Percentages of whole numbers

### 13. Ratio and Rate

<table>
<thead>
<tr>
<th>13.1. Compare two or more quantities of the same kind (ratio)</th>
<th>13.2. Comparing two quantities of different kinds (rate)</th>
<th>13.3. Comparing two or more quantities of the same kind (ratio)</th>
<th>13.4. Comparing two quantities of different kinds (rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.3.1. Multiples of 1-digit numbers to at least 100</td>
<td>5.1.3.2. Multiples of 2-digits whole numbers to at least 100</td>
<td>6.1.3.1. Multiples of 2-digit and 3-digit numbers</td>
<td>6.1.3.2. Comparing two quantities of different kinds (rate)</td>
</tr>
<tr>
<td>4.1.3.2. Comparing two quantities of different kinds (rate)</td>
<td>5.1.4.1. Factors of 2-digit whole numbers to at least 100</td>
<td>6.1.4.2. Factors of 2-digit and 3-digit whole numbers</td>
<td></td>
</tr>
<tr>
<td>4.1.4.1. Multiples of 2-digit numbers to at least 100</td>
<td>5.1.4.2. Factors of 2-digit whole numbers to at least 100</td>
<td>6.1.4.3. Prime factors of numbers to at least 100</td>
<td></td>
</tr>
<tr>
<td>4.1.5.1. Commutative; associative; distributive properties with whole numbers</td>
<td>5.1.5.1. Commutative; associative; distributive properties with whole numbers</td>
<td>6.1.5.1. Commutative; associative; distributive properties with whole numbers</td>
<td>6.1.5.2. Properties of 0 and 1</td>
</tr>
<tr>
<td>1.5. Properties of Rational numbers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.5.2. Properties of 0 and 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.1.6.1. Buying and selling
- Simple budgets
- Profit and loss

### 4.1.6.2. Simple budgets
- Profit and loss

### 6.1.6.1. Buying and selling
- Simple budgets
- Profit and loss

### 6.1.6.2. Simple budgets
- Reading and interpreting accounts
- Discount
## 2. Patterns, Functions and Algebra

<table>
<thead>
<tr>
<th>CONTENT</th>
<th>GRADE 4</th>
<th>GRADE 5</th>
<th>GRADE 6</th>
</tr>
</thead>
</table>
| 2.1. Numeric & Geometric patterns | 4.2.1. Investigate and extend numeric and geometric patterns looking for relationships or rules of patterns:  
- represented in physical or diagrammatic form  
- including sequences involving constant difference or ratio  
- of learner’s own creation  
4.2.1.2. Describe observed relationships or rules in learner’s own words | 5.2.1. Investigate and extend numeric and geometric patterns looking for relationships or rules of patterns:  
- represented in physical or diagrammatic form  
- including sequences involving constant difference or ratio  
- of learner’s own creation | 6.2.1. Investigate and extend numeric and geometric patterns looking for relationships or rules of patterns:  
- represented in physical or diagrammatic form  
- including sequences involving constant difference or ratio  
- of learner’s own creation  
- represented in tables |
| 2.2. Input and Output values     | Determine output values for given input values using:  
- Verbal description  
- Flow diagrams | Determine output values for given input values using:  
- Verbal description  
- Flow diagrams | Determine output values for given input values, or input values for given output values using:  
- Verbal description  
- Flow diagrams  
- Tables |
| 2.3. Number sentences (Introduction to Algebraic Expressions) | 4.2.3.1. Write number sentences to describe problem situation  
4.2.3.2. Solve and complete number sentences by:  
- inspection  
- trial and improvement  
- substitution  
4.2.3.3. Determine equivalence of different descriptions of the same relationship or rule presented:  
- verbally  
- in flow diagrams  
- by a number sentence | 5.2.3.1. Write number sentences to describe problem situation  
5.2.3.2. Solve and complete number sentences by:  
- inspection  
- trial and improvement  
- substitution  
5.2.3.3. Determine equivalence of different descriptions of the same relationship or rule presented:  
- verbally  
- in flow diagrams  
- by a number sentence | 6.2.3.1. Write number sentences to describe problem situation  
6.2.3.2. Solve and complete number sentences by:  
- inspection  
- trial and improvement  
- substitution  
6.2.3.3. Determine equivalence of different descriptions of the same relationship or rule presented:  
- verbally  
- in flow diagrams  
- by a number sentence in tables |
### 3. Space and Shape (Geometry)

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<th>GRADE 6</th>
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</thead>
</table>
| 3.1. Properties of 2-D shapes and 3-D objects | 4.3.1. Recognize, visualize and name 2-D shapes and 3-D objects in the environment:  
- rectangular prisms,  
- spheres  
- cylinders  
- pyramids  
- circles  
- polygons (up to 6-sided figures) | 5.3.1. Recognize, visualize and name 2-D shapes and 3-D objects in natural and cultural forms and geometric setting:  
- similarities between cubes and rectangular prisms  
- similarities between squares and rectangles  
- differences between cubes and rectangular prisms  
- differences between squares and rectangles  
- polygons (up to 7-sided figures) | 6.3.1. Recognize, visualize and name 2-D shapes and 3-D objects in natural and cultural forms and geometric setting:  
- similarities between tetrahedrons and other pyramids  
- similarities between rectangles and parallelograms  
- differences between tetrahedrons and other pyramids  
- differences between rectangles and parallelograms  
- polygons (up to 8-sided figures) |
|  | 4.3.1.2. Draw 2-D shapes on grid paper | 5.3.1.2. Draw 2-D shapes on grid paper | 6.3.1.2. Describe, sort and compare 2-D shapes and 3-D objects in terms of:  
- Faces  
- Vertices  
- Edges  
- Length of sides  
- Size of angles |  
- Drinking straws to make a skeleton  
- nets |
|  | 4.3.1.3. Describe, sort and compare 2-D shapes and 3-D objects in terms of:  
- Shapes of faces  
- Flat and curved surfaces  
- Straight and curved sides  
- Number of sides | 5.3.1.3. Describe, sort and compare 2-D shapes and 3-D objects in terms of:  
- Shape of faces  
- Number of faces  
- Number of sides  
- Length of sides  
- Number of sides  
- Number of vertices  | 6.3.1.4. Make 3-D models using:  
- Tessellations; and  
- Line symmetry |
|  | 4.3.1.4. Make 3-D models using cut out polygons | 5.3.1.4. Make 3-D models using cut out polygons | 6.3.1.5. Make 3-D models using:  
- Tessellations; and  
- Line symmetry |
|  | 4.3.1.5. Draw shapes on grid paper | 5.3.1.5. Draw shapes on grid paper | 6.3.1.6. Draw circles, patterns in circles and patterns with circles using an pair of compasses |
| 3.2. Transformations | 4.3.2. Recognising, draw and describing line of symmetry in 2-D shapes | 5.3.2. Recognising, draw and describing line of symmetry in 2-D shapes | 6.3.2. Recognising, draw and describing line of symmetry in 2-D shapes |
|  | 4.3.2.2. Use geometric figures and solids to perform:  
- Rotations (turns)  
- Reflections (flips)  
- Translations (slides) | 5.3.2.2. Use geometric figures and solids to perform:  
- Rotations (turns)  
- Reflections (flips)  
- Translations (slides)  
- Making 2-D shapes, 3-D objects and patterns using:  
- Tessellations  
- Line symmetry | 6.3.2.2. Use transformations (rotations, reflections and translations) and symmetry to describe relationships between 2-D shapes and 3-D objects. |
|  | 4.3.2.3. Making 2-D shapes, 3-D objects and patterns using:  
- Tessellations; and  
- Line symmetry | 5.3.2.3. Making 2-D shapes, 3-D objects and patterns using:  
- Tessellations  
- Line symmetry | 6.3.2.3. Draw enlargement and reductions of 2-D shapes to compare size and shape of:  
- Triangles  
- Quadrilaterals |
### 4. Measurement

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<tr>
<td><strong>4.1. Length, mass and capacity</strong></td>
<td>4.1.1. Length</td>
<td>4.1.1. Length</td>
<td>4.1.1. Length</td>
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<tr>
<td></td>
<td>• units: millimetres (mm), centimetres (cm),</td>
<td>• units: millimetres (mm), centimetres (cm),</td>
<td>• Use appropriate measuring instruments</td>
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<td>metres (m) and kilometres (km).</td>
<td>metres (m) and kilometres (km).</td>
<td>including rulers, measuring tapes, metre</td>
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<td>• measuring instruments: rulers, metre sticks,</td>
<td>• measuring instruments: rulers, metre sticks,</td>
<td>sticks, bathroom scales, kitchen scales,</td>
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<td></td>
<td>tape measures and trundle wheels</td>
<td>tape measures and trundle wheels</td>
<td>measuring jugs etc. to measure length, mass</td>
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<td>• conversion: between millimetres (mm),</td>
<td>• conversion: between millimetres (mm),</td>
<td>and capacity.</td>
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<td>centimetres (cm), metres (m) and kilometres</td>
<td>centimetres (cm), metres (m) and kilometres</td>
<td>• Estimate, measure, record, compare and</td>
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<td>(km).</td>
<td>(km).</td>
<td>order 2-D shapes and 3-D objects using SI</td>
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<td>units with appropriate precision for:</td>
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<td>Length: mm, cm, m, km</td>
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<td>Mass: g, kg</td>
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<td>Capacity: ml, l</td>
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<td></td>
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<td>• units: grams (g) and kilograms (kg)</td>
<td>• units: grams (g) and kilograms (kg)</td>
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<td>• measuring instruments: bathroom scales,</td>
<td>• measuring instruments: bathroom scales,</td>
<td>• conversion: between grams (g) and</td>
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<td>kitchen scales and balances</td>
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<td>• conversion: between grams (g) and</td>
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<td>4.1.3. Capacity</td>
<td>4.1.3. Capacity</td>
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<td>• units: millilitres (ml) and litres (l)</td>
<td>• units: millilitres (ml) and litres (l)</td>
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<td>4.1.4. Solve real life problems involving</td>
<td>4.1.4. Solve real life problems involving</td>
<td>4.1.4. Solve real life problems involving</td>
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<td>length, mass and capacity</td>
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<tr>
<td><strong>3.3. Viewing of objects</strong></td>
<td>Viewing objects in different positions</td>
<td>Viewing objects in different positions</td>
<td>Draw and interpret 3-D objects from different positions</td>
</tr>
<tr>
<td><strong>3.4. Position and movement</strong></td>
<td>4.3.4.1. Locate position on:</td>
<td>5.3.4.1. Locate position on:</td>
<td>6.3.4.1. Locate position on:</td>
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<tr>
<td></td>
<td>• Labelled (coded) grid</td>
<td>• Labelled (coded) grid</td>
<td>• Labelled (coded) grid</td>
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<tr>
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<td>• Column and row</td>
<td>• Maps</td>
<td>• Maps</td>
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<td>• Maps</td>
<td>5.3.4.2. Tracing a path between position</td>
<td>6.3.4.2. Describe how to move between positions on the grid</td>
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</tr>
</tbody>
</table>
### 4.2. Time

| 4.2.1. | Read, tell and write analogue, digital and 24-hour time in terms of:  
|        | - seconds  
|        | - minutes  
|        | - hours  

| 4.2.2. | Use time measuring instruments with precision:  
|        | - watch  
|        | - clock  

| 4.2.3. | Conversion between time units:  
|        | - seconds  
|        | - minutes  
|        | - hours  
|        | - days  
|        | - weeks  
|        | - months  
|        | - years  

| 4.2.4. | Solve problems involving time  

### 4.3 Temperature

| 4.3.1. | Investigate:  
|        | - units: degree Celsius  
|        | - measuring instruments: thermometers  
|        | - Solve real life problems involving temperature  

### 4.4 Perimeter, surface area and volume

| 4.4.1. | Investigate:  
|        | - perimeter using rulers or measuring tapes.  
|        | - Area of polygons using square grids and tiling to develop the concept of square units.  
|        | - Volume and capacity of 3-D objects to develop the concept of cubic units.  
|        | - Solve real life problems involving perimeter, surface area and volume.  

| 5.4.1. | Investigate:  
|        | - perimeter using rulers or measuring tapes.  
|        | - Area of polygons using square grids and tiling to develop the concept of square units.  
|        | - Volume and capacity of 3-D objects to develop the concept of cubic units.  
|        | - Solve real life problems involving perimeter, surface area and volume.  

| 6.4.1. | Investigate:  
|        | - perimeter using rulers or measuring tapes.  
|        | - Area of polygons using square grids to develop the rules for calculating the area of squares and rectangles.  
|        | - Volume and capacity of 3-D objects for to develop the rules for calculating the area of squares and rectangles.  
|        | - Relationship between perimeter and area of rectangles and squares.  
|        | - Relationship between surface area, volume and dimensions of rectangular prisms.  
|        | - Solve real life problems involving perimeter, surface area and volume.  

### 4.5 Classification of angles

| 4.5.1. | Recognize and describe right angles in 2-D shapes, 3-D objects and the environment.  

| 5.4.5.1. | Recognize and describe right angles in 2-D shapes, 3-D objects and the environment in terms of:  
|        | - Right angles  
|        | - Angles smaller than right angles  
|        | - Angles greater than right angles  

| 6.4.5.1. | Recognize and describe right angles in 2-D shapes, 3-D objects and the environment in terms of:  
|        | - Right angles  
|        | - Angles smaller than right angles  
|        | - Angles greater than right angles  

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## 5. Data Handling

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<td>4.5.1.1. Posing questions about own school and family environment</td>
<td>5.5.1.1. Posing questions about own school and family environment</td>
<td>6.5.1.1. Posing questions about own school and family environment</td>
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<tr>
<td></td>
<td>4.5.1.2. Identify appropriate data sources</td>
<td>5.5.1.2. Identify appropriate data sources</td>
<td>6.5.1.2. Identify appropriate data sources</td>
</tr>
<tr>
<td></td>
<td>4.5.1.3.</td>
<td>5.5.1.3. Making and using simple data collection sheets that involve counting objects to answer questions</td>
<td>6.5.1.3. Using simple data collection sheets requiring tally marks and simple questionnaires (yes/no type response) to answer questions</td>
</tr>
<tr>
<td></td>
<td>4.5.1.4. Collect data to answer questions</td>
<td>5.5.1.4. Collect data to answer questions</td>
<td>6.5.1.4. Collect data to answer questions</td>
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<tr>
<td>5.2. Organizing, recording and summarising data</td>
<td>4.5.2.1. Records data using: tally marks</td>
<td>5.5.2.1. Organizes and records data using: tally marks, tables</td>
<td>6.5.2.1. Organizes and records data using: tally marks, tables</td>
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<tr>
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<td>5.5.2.2. Examining ungrouped numerical data to determine the mode</td>
<td>5.5.2.2. Examining ungrouped numerical data to determine the mode and the median</td>
<td>6.5.2.2. Examining ungrouped numerical data to determine the mode and the median</td>
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<tr>
<td>5.3. Displaying data</td>
<td>4.5.3.1. Drawing a variety of graphs to display and interpret data including:</td>
<td>5.5.3.1. Drawing a variety of graphs to display and interpret data including:</td>
<td>6.5.3.1. Drawing a variety of graphs to display and interpret data including:</td>
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<tr>
<td></td>
<td>• Pictographs (one-to-one correspondence between data and representation)</td>
<td>• Pictographs (many-to-one correspondence)</td>
<td>• Pictographs (many-to-one correspondence)</td>
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<tr>
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<td>• Bar graphs</td>
<td>• Bar graphs</td>
<td>• Bar graphs</td>
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<tr>
<td>5.4. Interpreting data</td>
<td>4.5.4.1. Critically reading and interpreting data presented in a variety of ways to draw conclusions and make predictions sensitive to the role of:</td>
<td>5.5.4.1. Critically reading and interpreting data presented in a variety of ways in order to draw conclusions and make predictions sensitive to the role of:</td>
<td>6.5.4.1. Critically reading and interpreting data presented in a variety of ways in order to draw conclusions and make predictions sensitive to the role of:</td>
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<tr>
<td></td>
<td>• context (e.g. rural or urban);</td>
<td>• context (e.g. rural or urban);</td>
<td>• context (e.g. rural, urban, provincial or national);</td>
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<tr>
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<td>• other human rights issues.</td>
<td>• categories within the data (e.g. gender, race);</td>
<td>• categories within the data (e.g. age, gender, race);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• any other human rights issues.</td>
<td>• any other human rights issues.</td>
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<tr>
<td>5.5. Probability</td>
<td>4.5.5.1. Comparing and classifying events as:</td>
<td>5.5.5.1. Comparing and classifying events on scale from</td>
<td>6.5.5.1. Predicting the likelihood of events based on observation and places them on a scale from</td>
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<td>• certain that they will happen</td>
<td>• certain that they will happen, to</td>
<td>• impossible, to</td>
</tr>
<tr>
<td></td>
<td>• certain that they will not happen</td>
<td>• certain that they will not happen</td>
<td>• certain.</td>
</tr>
<tr>
<td></td>
<td>• uncertain</td>
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<td>4.5.5.2. List possible outcomes for simple experiments:</td>
<td>5.5.5.2. List possible outcomes for simple experiments:</td>
<td>6.5.5.2. List possible outcomes for simple experiments:</td>
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<td>• tossing a coin,</td>
<td>• tossing a coin,</td>
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<tr>
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<td>• rolling a die,</td>
<td>• rolling a die,</td>
<td>• rolling a die,</td>
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<tr>
<td></td>
<td>• spinning a spinner</td>
<td>• spinning a spinner</td>
<td>• spinning a spinner</td>
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<tr>
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<td>4.5.5.3. Counting the number of possible outcomes for simple trials.</td>
<td>5.5.5.3. Counting the frequency of actual outcomes for a series of trials.</td>
<td>6.5.5.3. Counting the frequency of actual outcomes for a series of trials.</td>
</tr>
</tbody>
</table>
Introduction

- Chapter 3 (Content Outline) is aligned to the Chapter 2 (Overview) and provides the teacher with sequenced content topics to be taught in each term.

- The examples given in the column “Clarification or Notes” in Chapter 3 are intended to guide the teacher on the content to be covered. Therefore, these notes do not cover the whole content.

- The order of content in not rigid but care must be taken not to teach content areas that involve measurement before the basic operations such as addition, subtraction, multiplication and division have been mastered at the required level.

- The time allocation (in weeks) is not rigid. It should be noted the time allocated for formal assessment tasks indicated at the end of each term does NOT imply that all the tasks should be written within the given time. The days of the week set aside for assessment should be spread in the whole term when planning for assessment.
**TERM 1 – Grade 4**

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<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
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<td><strong>NUMBERS, OPERATIONS AND RELATIONSHIPS</strong></td>
<td></td>
<td><strong>1.1 Whole numbers</strong> <strong>Whole number counting</strong></td>
<td></td>
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</tbody>
</table>
|                                                  |                              | • Count forwards between 0 and 10 000 in a variety of intervals including: 2s, 3s, 5s, 10s, 25s, 50s, 100s and also in 9s, 49s, 99s.  **Examples:**  
  a) Count in 2s from 31  
  b) Count in 3s from 110  
  c) Count in 9s from 267  
  • Revise natural numbers, whole numbers, even and odd numbers. | Every day               |
| **Mental calculations:**                         | **Addition**                 | • Addition: Add 1-digit number to a 3-digit number.  **Example:**  123 + 2 = 125          | Every day           |
|                                                  | **Subtraction**              | • Subtraction: Subtract a 1-digit number from 3-digit number.  **Example:**  423 – 6 = 417 |                     |
|                                                  |                              | • Extend number sequences.  **Examples:**  
  Write down the next 3 numbers in the sequence:  
  a) 173 ; 175 ; 177 ...  
  b) 769 ; 719 ; 669 ... |                     |
| **Place values**                                 |                              | • Recognise the values of digits in whole numbers to at least 4-digit numbers.  **Example:**  The place value of each digit in 4 371 is: |
|                                                  |                              | ![Place value table](#)                                                                 | 2 weeks             |
|                                                  |                              | The place value of:  
  a) 4 is Thousands  
  b) 3 is Hundreds  
  c) 7 is Tens  
  d) 1 is Units |                     |
### 1.1 Whole numbers

**Number lines**
- Insert 2-digit, 3-digit and 4-digit numbers on given number lines.

**Ordering numbers**
- Arrange numbers from:
  - Smallest to biggest (ascending order); and
  - Biggest to the smallest (descending order).

#### Examples:
- a) $4261 < 5261 < 6261 < 8261$
- b) $8484 > 8476 > 8467 > 8448$

---

### ADDITION

Add whole numbers with at least 4 digits
- Emphasize that numbers can be added in any order.
  - Example:
    - $26 + 19 = 19 + 26$
- By breaking down numbers.
  - Example:
    - Calculate $4362 + 2486$
      
      $4362 + 2486 = 4000 + 300 + 60 + 2 + 2000 + 400 + 80 + 6$
      
      OR
      
      $2 + 6 = 8$
      
      $+ 60 + 80 = 140$
      
      $+ 300 + 400 = 700$
      
      $+ 4000 + 2000 = 6000$
      
      $= 4362 + 2486 = 6848$
      
      or adding on:
      - Example: $4362 + 2000 → 6362 + 400 → 6762 + 80 → 6842 + 6 → 6848$
- Filling up tens:
  - Example:
    - $96 + 48 = 100 + 44 = 144$
- Use the vertical column-method. The vertical column method must not be forced or insisted upon. It should be introduced when learners fully understand how to add horizontally.
  - Example:
    - $4362 + 2486$
      
      $+ 6848$
      
      $= 6848$
- Use a range of strategies to check solutions and judge reasonableness of solutions.

---

### Rounding off whole numbers to the nearest 10, 100 or 1000
- Round off whole numbers to the nearest 10, 100 or 1 000.
  - Example:
    - Use a number line to show that:
      - a) $2180 ≈$ correct to the nearest 10
      - b) $2176 = 2200$ correct to the nearest 100
      - c) $2176 = 2000$ correct to the nearest 1 000
1.1 Whole numbers

**Subtraction**

**Counting**

- **Emphasize** that numbers **cannot** be subtracted in any order.

  **Example:** 78 – 20 ≠ 20 - 78

- Count backwards between 0 and 1000 in a variety of intervals.

  **Examples:**
  
  - a) Count backwards in 5s from 624 to 604
  - b) Count backwards in 9s from 624 to 588
  - c) Count backwards in 20s from 624 to 524

**Every day**

<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>Subtraction</th>
</tr>
</thead>
</table>

- **Converse relationship between addition and subtraction.**

  - Recognise and use the converse relationship between addition and subtraction.

  **Example:**
  
  If 19 + 8 = 27 then 27 – 19 = 8 and 27 – 8 = 19

**Number lines**

- Insert 1, 2, 3 and 4-digit numbers on given number lines.

**2 weeks**

<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>Subtraction</th>
</tr>
</thead>
</table>

**Subtracting whole numbers with at least 4 digits**

- **Example:** Calculate: 4687 – 2143

  Use the **breaking down** technique

  \[
  4687 - 2143 = 4000 + 600 + 80 + 7 - 2000 - 100 - 40 - 3 \quad \text{OR} \quad 7 - 3 = 4
  
  = 4687 - 2143 = 4000 + 600 + 80 + 7 - 100 - 40 - 3 \quad \text{OR} \quad 7 - 3 = 4
  
  = 2000 + 600 + 80 + 7 - 100 - 40 - 3 \quad \text{OR} \quad 7 - 3 = 4
  
  = 2544
  
  \]

  or

  \[
  4687 - 2000 \rightarrow 2687 - 100 \rightarrow 2587 - 40 \rightarrow 2547 - 3 = 2544
  
  or
  
  \[
  4687 - 2000 - 140 - 3 = 2687 - 140 - 3
  
  = 2547 - 3
  
  = 2544
  
  \]

  **or use the vertical column** method (only after learners understand how to subtract horizontally)

  **Example:**

  \[
  \begin{array}{c}
  4687 \\
  \underline{- 2143} \\
  2544
  \end{array}
  
  \text{or}
  
  \[
  \begin{array}{cccc}
  3 & 2 & 6 & 1 \\
  - 1 & 8 & 4 & 6 \\
  \hline
  1 & 4 & 1 & 5
  \end{array}
  \]

  **Uses a range of strategies to check solutions and judge reasonableness of solutions.**
<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>3.1. The properties of 2-D shapes and 3-D objects</th>
<th>0,5 week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solve problems involving addition and subtraction in real life situations. <strong>Key words:</strong> add, altogether, total, sum, subtract, difference, more than, less than. <strong>Examples:</strong> a) If 237 is added to a number, the answer is 1 396. What is the number? b) Nosipho has R18 more than Helen. How much do they have altogether if Helen has R60? c) A farmer sold 359 of his 1 108 sheep. Two months later he bought 560 sheep. How many sheep did he then have?</td>
<td>Describe, sort and compare 2-D shapes which have straight and/or curved sides. Recognise, visualise and name 2-D shapes in the environment &amp; in pictures including rectangles, triangles and circles. Name polygons in terms of the number of sides up to 6-sided figure, namely triangles, quadrilaterals, pentagons and hexagons. Draw polygons on grid paper. Describe, sort and compare 3-D objects according to geometric properties including the shapes of faces, the number of faces (sides) and the number of vertices. Recognise, visualise and name 3-D objects including cubes, rectangular prisms, triangular prisms, cylinders, spheres and pyramids. Make 3-D models using cut-out polygons.</td>
<td></td>
</tr>
<tr>
<td>1.1 Whole numbers <strong>MULTIPLICATION</strong></td>
<td>1.1 Whole numbers <strong>Mental calculations</strong></td>
<td>2 weeks</td>
</tr>
<tr>
<td>Emphasize that numbers can be multiplied in any order. <strong>Example:</strong> 60 × 76 = 76 × 60</td>
<td>Calculations involving multiplication of whole numbers to at least 10 × 10 (revise the multiplication tables). Write down the multiples of one-digit numbers to at least 100. <strong>Example:</strong> The multiples of 8 between 30 and 60 are 32, 40, 48, 56.</td>
<td></td>
</tr>
<tr>
<td>1.1 Whole numbers <strong>Number lines</strong></td>
<td>1.1 Whole numbers <strong>Doubling 1, 2 and 3 digit numbers.</strong></td>
<td>Every day</td>
</tr>
<tr>
<td>Use number lines to illustrate multiplication through repeated addition. <strong>Example:</strong> Illustrate that 2 + 2 + 2 + 2 = 8 and that 4 × 2 = 8</td>
<td>Double 1, 2 and 3 digit numbers. <strong>Examples:</strong> a) Double 8 = 8 + 8 = 16 or 2 × 8 = 16 b) Double 16 = 16 + 16 = 32 or 2 × 16 = 32 c) Double 132 = 132 + 132 = 264 or 2 × 132 = 264</td>
<td></td>
</tr>
<tr>
<td>1.1 Whole numbers <strong>Multiplying 2-digit numbers by 10, 100 and 1000</strong></td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Multiply 2-digit numbers by 10, 100 and 1 000. <strong>Examples:</strong> 73 × 10 = 730, 73 × 100 = 7 300, 73 × 1 000 = 73 000 because 73 is respectively 10 times, 100 times and 1 000 times larger. A misconception is that to multiply a number by 10, 100 or 1 000 means to add 1 or 2 or 3 zeros to the number and then incorrectly say that 0,73 × 10 = 0,730.</td>
<td>1 week</td>
<td></td>
</tr>
</tbody>
</table>
1.4 Multiples and Factors

**Factors of 2-digit numbers**

- **Examples:**
  a) Determine factors of 6
     Because $6 = 1 \times 6$ or $2 \times 3$ the factors of 6 are 1, 2, 3 and 6
  b) Determine factors of 18

The factors of 18 are 1, 2, 3, 6, 9, 18

**Note:** Factors are introduced so that learners can use factors to multiply 2-digit numbers by 2-digit numbers using their multiplication tables knowledge – not so that they can be asked to factorize any 2-digit number e.g. 68 or 84.

1.1 Whole numbers

**The distributive property of multiplication over addition**

- **Use the distributive property of multiplication over addition.**

**Example:**
Investigate that $5 \times 7 = 5 \times (4 + 3) = (5 \times 4) + (5 \times 3) = 20 + 15 = 35$

1.1 Whole numbers

**Solving problems involving multiplication**

- **Solve problems that involve multiplication in real life situations.**

**Key words:** multiply, product, altogether, total.

**Examples:**
  a) Which number is 38 less than the product of 17 and 4?
  b) In a school, there are 30 desks in each of 9 classrooms and 25 desks in each of 8 classrooms. How many desks are there in the 17 classrooms altogether?

### Formal Assessments

- **2 Tests**
- **1 Task**

<table>
<thead>
<tr>
<th>Formal Assessments (to be completed during Term 1)</th>
<th>2 Tests</th>
<th>1 Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 week (days to be spread for the three formal assessments)</td>
<td>1 week</td>
<td></td>
</tr>
</tbody>
</table>
## TERM 2 – Grade 4

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers, Operations and Relationships</td>
<td>1.1. Whole numbers <strong>DIVISION</strong></td>
<td>Emphasize that numbers cannot be divided in any order. Example: $125 \div 5 \neq 5 \div 125$</td>
<td>Every day</td>
</tr>
</tbody>
</table>
| | 1.1. Whole numbers **Mental mathematics** | Calculate quotients using knowledge of multiplication tables. Example:  
- $72 \div 9 = 8$  
- $74 \div 9 = 8$ remainder 2  
- $132 \div 12 = 11$ | 2 weeks |
| 1.1. Whole numbers **Halving 1, 2 and 3 digit numbers** | Halve 1, 2 and 3 digit numbers. Example:  
- Half of:  
  - a) $8 = 8 \div 2 = 4$  
  - b) $94 = 94 \div 2 = 47$  
  - c) $216 = 216 \div 2 = 108$ | | |
| | 1.1. Whole numbers **Even and odd numbers** | Compare even and odd numbers. Examples:  
  - a) $376$ is an even number because it is exactly divisible by 2.  
  - b) $377$ is an odd number because divided by 2 it gives a remainder of 1.  
Example:  
Write down the even numbers between 237 and 251. | | |
| | 1.1. Whole numbers **Number lines** | Illustrate that: $8 - 2 - 2 - 2 - 2 = 0$ and that $8 \div 2 = 4$ | | |
| 1.1. Whole numbers **Divide whole numbers with at least 3 digits by 1-digit whole numbers** | Example:  
Calculate: $192 \div 8$  
By breaking down technique. Write $192$ as the sum of multiples of 8 ($192 = 160 + 32$ or $80 + 80 + 32$)  
- $32 \div 8 = 4$  
- $160 \div 8 = 20$  
Means $192 \div 8 = 24$ | 2 weeks |

2.1. Whole numbers

Converse relationship between multiplication and division.

- Recognize and use the converse relationship between multiplication and division.

**Example:**

If $47 \times 9 = 423$ then $423 \div 47 = 9$ and $423 \div 9 = 47$

2.3. Multiple operations and number sentences

- Calculations involving addition and/or subtraction and/or multiplication and/or division.

**Examples:**

a) $(124 + 16) \div 7 = 140 \div 7 = 20$
b) $(23 \times 8) - (110 - 26) = 184 - 84 = 100$
c) $(12 \times 9) - (9 \div 3) = 108 - 3 = 105$

**Note:** Inserting brackets does not mean to draw $( )$ but involves performing an operation.

- Use symbols to write number sentences.

**Example:**

A certain number $\square$ is 3 more than $t$ means $\square = t + 3$ or $\square - 3 = t$

- Complete number sentences by inspection and check the answers by substitution.

**Example:**

a) $\square + 18 = 36$ means $\square = 28$
b) $(4 + \square) \times 6 = 42$ means $\square = 3$

- Use long division method

Use long division method only if learners fully understand the division process.

**Note:** Long division method may be shown to learners in Grade 4 but should not be tested until Grade 5.

\[
\begin{array}{c|c}
8 & 24 \\
\hline
192 & 24 \\
-160 & \downarrow 8 \times 20 \\
-32 & \downarrow 192 - 160 \\
-32 & \downarrow 8 \times 4 \\
0 & \downarrow 32 - 32 \\
\end{array}
\]

- Use short-method (without writing all the long-division steps)

\[
\begin{array}{c|c}
8 & 3 \\
\hline
192 & 24 \\
\end{array}
\]

- Use a range of strategies to check solutions and judge reasonableness of solutions.
## 1. Whole numbers

### Problems involving division.

- Solve problems that involve division in context.
  
  **Key words:** each, share equally, per group/packet, class etc.

**Examples:**
- a) The product of two numbers is 405. If the one number is 9, what is the other?
- b) 580 apples must be shared equally between 18 people. Calculate how many apples each person will get and how many apples will be left.

<table>
<thead>
<tr>
<th>Formal Assessments (to be completed during Term 2)</th>
</tr>
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<tbody>
<tr>
<td>• 1 Task</td>
</tr>
<tr>
<td>• 1 Test</td>
</tr>
<tr>
<td>• 1 Half-yearly Examination</td>
</tr>
</tbody>
</table>

## 4. Measurement

### Length; Mass; Capacity

- Use appropriate measuring instruments including rulers, measuring tapes, metre sticks, bathroom scales, kitchen scales, measuring jugs etc. to measure length, mass and capacity.

- Estimate, measure, record, compare and order 2-D shapes and 3-D objects using SI units with appropriate precision for:
  
  **Length:** mm, cm, m, km
  
  **Mass:** g, kg
  
  **Capacity:** ml, l

- Convert units of length, mass & capacity.

- Solve problems involving length, mass & capacity in real life situations.

**Examples:**
- a) Siphiwe cuts 6 pieces of ropes each 500mm long, from 3,5 metres of rope. What is the length of the rope that will be left over?
- b) A bag of maize meal contains 10 kg. Busi used 2 kg in the first week in the week and 3 kg in the next week. She then divided the rest equally into 2 separate bags. What will be the mass of the 2 remaining bags?
- c) Waseela used 2l of water for making tea and coffee, and 60,5 litres of water for doing her washing and 3,5 l of water for washing dishes. How much water did she use all together?

## 4.4. Perimeter, Area, Capacity and Volume

- Investigate and approximate:
  
  a) The perimeter of polygons using rulers or measuring tapes.
  
  b) The area of polygons (using square grids and tiling) in order to develop an understanding of square units.
  
  c) The capacity of 3-D objects by filling them.
  
  d) The volume of 3-D objects (using 1 cm³ cubes) to develop an understanding of cubic units.

<table>
<thead>
<tr>
<th>Formal Assessments (days to be spread for the three formal assessments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2 weeks</td>
</tr>
<tr>
<td>CONTENT AREA</td>
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<tr>
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<tr>
<td><strong>1.6. Financial Mathematics</strong></td>
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<tr>
<td>Money</td>
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<tr>
<td>Solving problems involving money</td>
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<td><strong>Example:</strong></td>
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<tr>
<td><strong>1.2 Fractions</strong></td>
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<tr>
<td>Common fractions and decimal fractions</td>
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<tr>
<td>Solving problems involving common fractions and decimal fractions</td>
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<td><strong>Example:</strong></td>
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<tr>
<td><strong>1.3 Ratio and Rate</strong></td>
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<tr>
<td>Solving problems involving ratio and rate</td>
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<tr>
<td><strong>Examples:</strong></td>
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<tr>
<td><strong>Numbers, Operations and Relationships</strong></td>
</tr>
</tbody>
</table>
### Formal Assessments
(to be completed during Term 3)
- 2 Tests
- 1 Task

### TERM 4 – Grade 4

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
</table>
| **SPACE & SHAPE**                   | 2.2Transformation Geometry | • Recognise and describe lines of symmetry in 2-D shapes.  
• Draw lines of symmetry in 2-D shapes.  
• Use 2-D shapes to make geometric patterns and to tessellate (tile) a surface leaving no gaps.  
• Describe and sketch views of simple 3-D objects (solids) from different positions.  
• Locate position on a labelled grid or map:  
  a) from given instructions  
  b) in columns and rows  
• Describe how to move positions on a grid. | 1 week |
| **PATTERNS AND FUNCTIONS**          | 2.1Numeric & Geometric patterns | • Look for a relationship or rule represented in diagrammatic form not limited to sequences involving constant difference or ratio.  
Example:  
Write down the next 3 numbers in each of the following sequences and also write down the rule which you used.  
  a) 4; 7; 10; ...  
  b) 36; 32; 28; ...  
  c) 1; 2; 4; ...  
  d) 1; 1; 2; 3; 5; ...  
• Describe observed relationships or sequences or rules in own words.  
Examples:  
Describe the rules in the following sequences in own words:  
  a) 3; 6; 9; ...  
  b) 11; 22; 33; ...  
  c) ; ; ; ... | 2 weeks |
### 2.2 Input and output Values

- Determine output values for given input values using:
  - a) verbal descriptions
  - b) flow diagrams

**Examples:**
- Use the given rule to calculate the output values for the given input values.

\[
\begin{array}{c|c}
\text{Input} & \text{Output} \\
1 & \times 3 \\
3 & \times 3 \\
5 & \times 3 \\
7 & \times 3 \\
9 & \times 3 \\
\end{array}
\]

### MEASUREMENT

#### 4.2. Time

- Read, tell and write analogue, digital and 24-hour time to at least the nearest, hour, minute and second.
- Solve problems involving calculation and conversion between appropriate time units including: seconds, minutes, hours, days, weeks, months and years.

2 weeks

### DATA HANDLING

#### 5.1. Collection of data

- Pose simple questions about own school and family environment, and identify appropriate data sources to address human rights, social, political, cultural, environmental and economic issues in the environment.
- Collect data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and the class.

#### 5.2. Organizing and recording data

- Organise and record data, using tally marks and tables.

#### 5.3. Displaying data

- Draw a variety of graphs to display and interpret data (ungrouped) including:
  - a) pictographs with a 1-1 correspondence between data and representation (e.g. one picture represents one person)
  - b) bar graphs (emphasize the correct labelling of the horizontal & vertical axes)

2 weeks

#### 5.4. Interpreting Data

- Critically read and interpret data represented in a variety of ways (including own representations and representations in the media – both words and graphs) to draw conclusions and make predictions sensitive to the role of:
  - a) context (e.g. rural or urban)
  - b) other human rights issues.

#### 5.5. Probability

- Compare and classify events from daily life as:
  - a) certain that they will happen, or
  - b) certain they will not happen, or
  - c) uncertain.
### Curriculum and Assessment Policy Statement (CAPS): Mathematics – Intermediate Phase

#### Formal Assessments
- Revision
- 1 Tests
- Final Examination

<table>
<thead>
<tr>
<th>Formal Assessments</th>
<th>Counts the number of possible outcomes for simple trials.</th>
<th>2 weeks (days to be spread for the two formal assessments)</th>
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</table>

### TERM 1 - Grade 5

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<th>CONTENT</th>
<th>NOTES or CLARIFICATION</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers, Operations and Relationships</td>
<td>1.1 Whole numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mental calculations</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Addition</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Do mental addition involving whole numbers.</td>
<td></td>
<td>Every day</td>
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<tr>
<td></td>
<td>Examples:</td>
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<td></td>
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<tr>
<td></td>
<td>a) 187 + 7 = 194</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) 9 + 392 = 401</td>
<td></td>
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<tr>
<td></td>
<td>c) Add the smallest even whole number and the largest 3-digit whole number.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Do mental subtraction involving whole numbers.</td>
<td></td>
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<tr>
<td></td>
<td>Examples:</td>
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<tr>
<td></td>
<td>a) 211 – 12 = 199</td>
<td></td>
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<tr>
<td></td>
<td>b) 375 – 25 = 350</td>
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<tr>
<td></td>
<td>c) Subtract the smallest 2-digit whole number from the smallest 4-digit whole number.</td>
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<tr>
<td></td>
<td>d) Write down the next 3 number in each sequence:</td>
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<td></td>
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<tr>
<td></td>
<td>i. 447 ; 467 ; 487 ; ...</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>ii. 857 ; 807 ; 757 ; ...</td>
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<tr>
<td></td>
<td>1.1 Whole numbers</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Place values</strong></td>
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<tr>
<td></td>
<td>Recognise the place values of digits in whole numbers to at least 6 digits.</td>
<td></td>
<td>1 week</td>
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<tr>
<td></td>
<td>Examples:</td>
<td></td>
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<tr>
<td></td>
<td>a) The value of digit 7 in the number 871 253 is 7 ten thousands or 70 000 or 7 T th.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
b) In the number 56 783 there are 56 thousands, 567 hundreds, 5 678 tens and 57 783 units.
c) The place value of each digit in 15 683 is:

<table>
<thead>
<tr>
<th>TTH</th>
<th>TH</th>
<th>H</th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

1.1 Whole numbers

Number lines

Ordering numbers

- Insert 3-digit, 4-digit and 5-digit numbers on given number lines.
- Arrange numbers in ascending order or in descending order of size.

Examples:
(a) 15 682 < 16 528 < 26 185 < 26 851
(b) 76 544 > 75 464 > 67 454 > 65 474

1.1 Whole numbers

Addition

Addition of numbers with at least 5-digits

Emphasise that numbers can be added in any order.

Example:
Calculate : 56 423 + 7 581

Using the breaking down technique:
- 50 000 + 6 000 + 400 + 20 + 3 + 7 000 + 500 + 80 + 1
- = 50 000 + 6 000 + 7 000 + 400 + 500 + 20 + 80 + 3 + 1
- = 50 000 + 13 000 + 900 + 100 + 4
- = 63 000 + 1 004
- = 64 004

or
- 3 + 1 = 4
- and 20 + 80 = 100
- and 400 + 500 = 900
- and 6 000 + 7 000 = 13 000
- and 50 000 + 0 = 50 000

means 56 423 + 7 581 = 64 004

or using the adding on technique:
56 423 + 7 000 → 63 423 + 500 → 63 923 + 80 → 64 003 + 1 → 64 004

or use the vertical column method (only after learners fully understand how to add horizontally).

| 5 6 4 2 3 |
| + 7 5 8 1 |
| 6 4 0 0 4 |

1.1 Whole numbers

Round off whole numbers to the nearest 5, 10, 100 or 1 000

- Round off whole numbers to the nearest 5, 10, 100 or 1 000.

Examples:
(a) Use a number line to show that:
i. 3 454 ≈ 3 455 correct to the nearest 5
ii. 3 454 ≈ 3 450 correct to the nearest 10
iii. 3 454 ≈ 3 500 correct to the nearest 100
iv. $3 454 \approx 3 000$ correct to the nearest 1000

b) Calculate the approximate value of $473 + 128$
$473 + 128 = 470 + 130 \approx 600$ to the nearest 10

<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>SUBTRACTION</th>
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</thead>
<tbody>
<tr>
<td><strong>SUBTRACTION</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Counting</strong></td>
<td></td>
</tr>
<tr>
<td>Emphasize that numbers cannot be subtracted in any order.</td>
<td>Example: $149 - 123 \neq 123 - 149$</td>
</tr>
<tr>
<td>• Count backwards in a variety of intervals.</td>
<td>Examples:</td>
</tr>
<tr>
<td>a) Count backwards in 10s from 7 632 to 7 582</td>
<td></td>
</tr>
<tr>
<td>b) Count backwards in 50s from 7 632 to 7 382</td>
<td></td>
</tr>
<tr>
<td>c) Count backwards in 99s from 7 632 to 7 236</td>
<td></td>
</tr>
<tr>
<td>• Recognise and use the converse relationship between addition and subtraction.</td>
<td>Example:</td>
</tr>
<tr>
<td>If $67 + 22 = 89$ then $89 - 67 = 22$ and $89 - 22 = 67$</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>Number lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Insert 3, 4 and 5-digit numbers on given number lines.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>1.1 Whole numbers</th>
<th>Subtraction of numbers with at least 5 digits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Subtract numbers with at least 5 digits</td>
<td>Example: $25 746 - 14 532$</td>
</tr>
<tr>
<td>Using the breaking down technique</td>
<td></td>
</tr>
<tr>
<td>$25 746 - 14 532$</td>
<td></td>
</tr>
<tr>
<td>$= 20 000 + 5 000 + 700 + 40 + 6 = 10 000 + 4 000 + 500 + 30 + 2$</td>
<td></td>
</tr>
<tr>
<td>$= 20 000 - 10 000 + 5 000 - 4 000 + 700 - 500 + 40 - 30 + 6 - 2$</td>
<td></td>
</tr>
<tr>
<td>$= 10 000 + 1 000 + 200 + 10 + 4$</td>
<td></td>
</tr>
<tr>
<td>$= 11 214$</td>
<td></td>
</tr>
<tr>
<td>or $25 746 - 10 000 \rightarrow 15 746 - 500 \rightarrow 11 246 - 30 \rightarrow 11 216 - 1 \rightarrow 11 214$</td>
<td></td>
</tr>
<tr>
<td>or $25 746 - 10 000 - 4 000 - 500 - 2 \rightarrow 15 746 - 4 000 - 500 - 30 - 2$</td>
<td></td>
</tr>
<tr>
<td>$= 11 746 - 4 000 - 30 - 2$</td>
<td></td>
</tr>
<tr>
<td>$= 11 446 - 30 - 2$</td>
<td></td>
</tr>
<tr>
<td>$= 11 416 - 2$</td>
<td></td>
</tr>
<tr>
<td>$= 11 214$</td>
<td></td>
</tr>
<tr>
<td>or Use the vertical column method only after learners understand how to subtract horizontally</td>
<td></td>
</tr>
<tr>
<td>$25 746$</td>
<td></td>
</tr>
</tbody>
</table>
### Using compensation (counterbalance)

#### a) Calculate: \(8\ 743 - 5\ 684\)

\[
8\ 743 - 5\ 684 = 8\ 000 + 700 + 40 + 3 - 5\ 000 - 600 - 80 - 4
\]
\[
= 8\ 000 + 600 + 130 + 13 - 5\ 000 - 600 - 80 - 4
\]
\[
= 3\ 000 + 0 + 50 + 9
\]
\[
= 3\ 059
\]

Or

\[
\begin{array}{c}
8\ 743 \\
-5\ 684 \\
\hline
3\ 059
\end{array}
\]

### Using the additive property of zero by compensation to calculate.

**Example:** Calculate \(96 + 87:\)

\[
96 + 87 = 96 + 4 + 87 - 4 = 100 + 83 = 183
\]

Or

\[
87 + 96 = 87 + 13 + 96 - 13 = 100 + 83 = 183
\]

### Uses a range of strategies to check solutions and judge reasonableness of solutions.

### 1.1 Whole numbers

**Solving Problems involving addition & subtraction**

- Solve problems that involve addition and subtraction in real life situations.

**Examples:**

a) The sum of two numbers is 1876. If the one number is 999, what is the other number?

b) Seventy eight of the 207 Grade 5 learners in a school play netball. The number of learners who play soccer is 47 more than the number who plays netball. If the rest of the learners play tennis, calculate the number of learners who play tennis.

### 3.1 Properties of 2-D shapes and 3-D objects

- Describe, sort and compare 2-D shapes which have straight and/or curved sides.
- Recognise, visualise and name 2-D shapes in the environment and in pictures including rectangles, triangles and circles.
- Name polygons in terms of the number of sides up to 8-sided figures.
- Draw polygons on grid paper.
- Investigate the similarities and differences between squares and rectangles.
- Describe, sort and compare 3-D objects according to geometric properties including the shapes of faces, the number of faces (sides) and the number of vertices.
- Recognise, visualise and name 3-D objects including cubes, rectangular prisms, triangular prisms, cylinders, spheres and pyramids.
- Investigate the similarities and differences between cubes and rectangular prisms.
### Numbers, Operations and Relationships

#### 1.1 Whole numbers

| **MULTIPLICATION** | **Emphasize:** that numbers can be multiplied in any order.  
| Example: | $7 \times 8 \times 9 = 8 \times 7 \times 9$ |

#### Mental calculations

- Do calculations involving multiplications of whole numbers to at least $10 \times 10$ (revise the multiplication tables).

#### Doubling 1, 2 and 3-digit numbers

- Double 1, 2 and 3-digit numbers.

**Examples:**
- **a)** Double $9 = 2 \times 9 = 18$
- **b)** Double $19 = 2 \times 19 = 38$
- **c)** Double $199 = 2 \times 119 = 238$

#### Factors of at least any 2-digit number

- Determine the factors of 2-digit numbers.

**Examples:**
- **(a)** Determine the factors of 18:
  - Because $18 = 3 \times 6$ or $2 \times 9$ or $1 \times 18$; the factors of 18 are $1, 2, 3, 6, 9$ and 18.
- **(b)** Determine the factors of 54:
  - Because $54 = 2 \times 27 = 1 \times 54 = 3 \times 18 = 9 \times 6$, the factors of 54 are: $1, 2, 3, 6, 9, 18, 27$ and 54.

- Use compensation (counter balancing using substitution) to calculate

**Example:**
Use the multiplicative property of one to calculate $129 \times 42$

$$129 \times 42 = (129 \times 7) \times (42 \div 7) = 903 \times 6 = 5418$$

$$129 \times 42 = (129 \times 6) \times (42 \div 6) = 774 \times 7 = 5418$$

*Every day*

*1 week*
### 1.1 Whole numbers

**Multiply at least 3-digit whole numbers by 2-digit whole numbers**

- Multiply at least 3-digit whole numbers by 2-digit whole numbers.

#### Examples:

**a) Use factors to multiply**

i. Calculate \(547 \times 60\)

\[
547 \times 60 = 547 \times 6 \times 10 = 3282 \times 10 = 32820
\]

(using the factors of 60)

ii. Calculate \(547 \times 45\)

\[
547 \times 45 = 547 \times 9 \times 5 = 4923 \times 5 = 24615
\]

(using the factors of 45)

**b) Use the distributive property**

\[
547 \times (40 + 5) = 547 \times 40 + 547 \times 5
\]

\[
= 21880 + 2735
\]

\[
= 24615
\]

or

\[
547 \times (50 - 5) = 547 \times 50 - 547 \times 5
\]

\[
= 27350 - 2735
\]

\[
= 24615
\]

**c) Use the vertical column method** only after learners understand the multiplication process.

\[
\begin{array}{c}
547 \\
\times 45
\end{array}
\]

\[
\begin{array}{c}
2735 \\
21880 \\
24615
\end{array}
\]

#### Uses a range of strategies to check solutions and judge reasonableness of solutions.

### Formal Assessments (to be completed during Term 1)

- **2 Tests**
- **1 Task**

<table>
<thead>
<tr>
<th>Formal Assessments (to be completed during Term 1)</th>
<th>1 week</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>2 Tests</strong></td>
<td></td>
</tr>
<tr>
<td>- <strong>1 Task</strong></td>
<td></td>
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</tbody>
</table>

(days to be spread for the three formal assessments)
### TERM 2 - Grade 5

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>NOTES or CLARIFICATION</th>
<th>DURATION (in weeks)</th>
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</thead>
<tbody>
<tr>
<td>Numbers, Operations and Relationships</td>
<td>1.1 Whole numbers</td>
<td><strong>DIVISION</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Whole numbers</td>
<td><strong>Mental mathematics</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Whole numbers</td>
<td><strong>Halving 1, 2 and 3 digit numbers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Whole numbers</td>
<td><strong>Divide whole numbers with at least 3 digits by 2-digit whole numbers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>NOTES or CLARIFICATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Emphasize that numbers cannot be divided in any order. <strong>Example:</strong> 120 ÷ 10 ≠ 10 ÷ 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Calculate quotients using knowledge of multiplication tables. <strong>Example:</strong> 84 ÷ 7 = 12 , 66 ÷ 8 = 8 remainder 2</td>
<td></td>
<td>Every day</td>
</tr>
<tr>
<td></td>
<td>• Halve 1, 2 and 3-digit numbers <strong>Example:</strong> Half of 54 = 27, half of 168 = 84 and half of 500 = 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Divide whole numbers with at least 3 digits by 2-digit whole numbers <strong>Examples:</strong></td>
<td></td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>a) Calculate 266 ÷ 7 Using <strong>breaking down</strong> technique Write 266 as the sum of multiples of 7, for example: 266 ÷ 210 ÷ 56 or 140 ÷ 70 ÷ 56 56 ÷ 7 = 8 and 210 ÷ 7 = 30 means 266 ÷ 7 = 38</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Use <strong>short division</strong> 266 ÷ 7 = 38 7 38 266 56 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Use the <strong>factor method</strong> to calculate: i) 680 ÷ 20 680 ÷ 20 = 680 ÷ 10 ÷ 2 = 34 680 ÷ 20 680 ÷ 10 2 34</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Use the <strong>halving method</strong> to calculate: ii) 736 ÷ 16 736 ÷ 16 = 736 ÷ 8 = 46 736 ÷ 16 736 ÷ 8 46</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.1 Whole numbers

#### Converse relationship between multiplication and division

- Recognize and use the converse relationship between multiplication and division.

**Example:**
If $139 \times 53 = 7367$ then $7367 \div 139 = 53$ and $7367 \div 53 = 139$.

#### Multiple operations with whole numbers

- Do calculations involving addition and/or subtraction, multiplication and/or division by emphasizing the order of operations.

**Examples:**
- a) $(66 + 24) \div 6 = 90 \div 6 = 15$
- b) $66 + (24 \div 6) = 66 + 4 = 70$
- c) $19 \times 3 - 3 \times 2 = 57 - 6 = 51$

#### Solving Problems involving multiplication and division

- Solve problems involving multiplication and division in real life situations.

**Examples:**
- a) Which number is 40 less than the product of nine and twelve?
- b) Jeremia planted peach trees in 15 rows in an orchard. How many trees did he plant altogether if he planted 20 trees in each row?
- c) 640 eggs must be packed into containers which each hold 18 eggs. How many containers can be filled and how many eggs will be left?
| Measurement | 4.1 Length, Mass, Capacity | Use appropriate measuring instruments including rulers, measuring tapes, metre sticks, bathroom scales, kitchen scales, measuring jugs etc. to measure length, mass and capacity.  
 Use thermometers to measure temperature.  
 Estimate, measure, record, compare and order 2-D shapes and 3-D objects using SI units with appropriate precision for:  
 Length: mm, cm, m, km  
 Mass: g, kg  
 Capacity: ml, l  
 Temperature: degrees Celsius scale  
 Convert units of length, mass and capacity.  
 Solve problems involving length, mass & capacity in real life situations. | 4 weeks |
|---|---|---|---|
| 4.3 Temperature | Introduce units of measurement for temperature (degrees Celsius)  
 Introduce thermometers as a measuring instrument to measure temperature.  
 Solve real life problems involving temperature.  
 **Example:**  
 The temperature was 12°C in the morning. It increased with 5°C up to mid-day and decreased with 7°C up to 7pm. What was the temperature at mid-day and at 7pm? | | |
| 4.4 Perimeter, Area and Volume | Investigate and approximate:  
 a) Perimeter using rulers or measuring tapes.  
 b) Area of polygons (using square grids and tiling) in order to develop an understanding of square units.  
 c) Capacity of 3-D objects by filling them.  
 d) Volume of 3-D objects (using 1 cm³ cubes) to develop an understanding of cubic units.  
 **Example:**  
 The shape of the school grounds is shown below.  
 ![Diagram of school grounds](image)  
 Calculate the length of fencing needed to fence all four sides of the school grounds. | | |

**Formal Assessments** (to be completed during Term 2)  
- 1 Test  
- 1 Task  
- 1 Midyear/ Half-yearly examination  

**1 week** (days to be spread for the three formal assessments)
### TERM 3 - Grade 5

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>NOTES or CLARIFICATION</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numbers &amp; Number Operations</strong></td>
<td><strong>1.6 Financial Mathematics</strong>&lt;br&gt;- Money&lt;br&gt;- Solving Problems involving money</td>
<td>- Revise conversions between Rand and cents.&lt;br&gt;- Revise and extend calculating making or giving change when shopping.&lt;br&gt;- Financial mathematics including buying, selling, profit and loss and simple budgets.</td>
<td>2 weeks</td>
</tr>
</tbody>
</table>
| | **1.2 Fractions**<br>**Common Fractions** | - Revise and emphasise the equivalence of division and common fractions.<br>**Example:**<br>

\[
1 \div 10 = \frac{1}{10}
\]

- Recognise and represent common fractions in diagrammatic form in order to describe and compare them.<br>- Describe and compare fractions with different denominators to at least twelfths.<br>- Use equivalent forms of common fractions with denominators that are multiples of each other.<br>- Count forwards and backwards in fractions and illustrate simple fractions on a number line.<br>- Add and subtract common fractions with the same denominators including mixed numbers.<br>**Examples:**<br>

- \(\frac{7}{10} + \frac{2}{10} = \frac{9}{10}\)
- \(\frac{11}{12} - \frac{5}{12} = \frac{7}{12}\)
- \(\frac{1}{2} + \frac{1}{2} = 1\)
- \(\frac{3}{7} - 1\frac{2}{7} = \frac{5}{7}\)

- Calculate fractional parts of quantities in the real life situations of measurement.<br>**Example:**<br>

If \(\frac{1}{9}\) of 54 kg = 6 kg then \(\frac{3}{9}\) of 54 kg = \(4 \times 6\) kg = 24 kg. | 3 weeks |
| | **1.2 Fractions**<br>**Decimal fractions** | - Write tenths, hundredths and thousandths in decimal form:<br>**Examples:**<br>

- \(\frac{1}{10} = 0.1\)
- \(\frac{7}{100} = 0.07\)
- \(\frac{9}{1000} = 0.009\) | 3 weeks |
### 1.3 Ratio & Rate

- The meaning of the prefixes: deci-, centi- and milli-.
- Write decimal fractions as common fractions.
  **Examples:**
  a) \(0,3 = \frac{3}{10}\)
  b) \(0,09 = \frac{9}{100}\)
- Use decimal fractions of the form 0,5; 1,5; 2,5 etc. in the real life situations.

<table>
<thead>
<tr>
<th>Formal Assessments (to be completed during Term 3)</th>
<th>1 week</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Tests</td>
<td></td>
</tr>
<tr>
<td>1 Task</td>
<td></td>
</tr>
</tbody>
</table>

- Solve problems that involve comparing two or more quantities of the same kind (ratio concept) and comparing two quantities of different kinds (Rate concept e.g. R/kg)
  **Examples:**
  a) Write the ratio of 80 cents to R4,00 in the simplest form.
  b) Peter is 5 years old and his father is 25 years older than Peter. What is the ratio of Peter’s age to his father’s age?
  c) A motorist travelled 420 km in 5 hours. Calculate his average speed per hour.
<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>NOTES or CLARIFICATION</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
</table>
| SPACE AND SHAPE     | 3.2 Transformation                           | • Recognise, describe and perform translations (slides), reflections (flips) and rotations (turns) using geometric figures and solids.  
• Draw lines of symmetry in 2-D shapes and figures.  
• Use 2-D shapes to make geometric patterns and to tessellate (tile) a surface leaving no gaps.  
• Describe and sketch views of simple 3-D objects (solids) from different positions.  
• Locate position on a labelled grid or map and trace paths between positions. | 1 week              |
|                     | Geometry                                      |                                                                                       |                     |
|                     | Tessellations                                 |                                                                                       |                     |
|                     | Views of simple 3-D objects                   |                                                                                       |                     |
|                     | Locate position on a grid or map             |                                                                                       |                     |
| PATTERNS AND        | 2.1 Numeric and Geometric patterns           | • Look for a relationship or rule in numeric and geometric patterns:  
  a) Represented in diagrammatic form;  
  b) Not limited to sequences involving constant difference or ratio.  
  Examples:  
  a) Write the next 3 numbers in each of the following sequences and also write down the rule which you used:  
  b) 6; 8; 11; 15; ...  
  c) 1; 6; 2; 7; 3; 8; ...  
  d) 1; 3; 5; 7; ...  
  e) 1.5; 2; 2.5; 3; ...  
  • Describe observed relationships or rules in own words.  
  Example:  
  Describe the rule of the sequences in your own words:  
  a) 1; 3; 5; 7; ...  
  b) 2, 4, 8, 16; ...  
  c) ![Diagram]
  • Look for a relationship or rule in patterns created by learners. | 2 weeks              |
| FUNCTIONS           |                                             |                                                                                       |                     |
### 2.2 Input and Output Values
- Determine output values for given input values using verbal descriptions and flow diagrams.

**Example:**
Describe the rule in the flow diagram in your own words and use the rule to calculate the missing input and output values.

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>124</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**Rule:** \( + \ 99 \)

### 2.3 Number Sentences
- Use symbols to write number sentences.

**Example:**
A certain number \( \square \) is 12 less than \( t \) means \( t = \square + 12 \)

- Complete number sentences by inspection and check answers by substitution.

**Example:**
Determine the value of \((20.0 - \chi) + 63 = 76\) means \( \chi = 7 \)

### MEASUREMENT
#### 4.2 Time
- Read, tell and write analogue, digital and 24-hour time to at least the nearest hour, minute and second.
- Solve problems involving calculation and conversion between appropriate time units including decades, centuries and millennia.

### DATA HANDLING
#### 5.1 Collection of Data
- Pose simple questions about own school and family environment, and identify appropriate data sources.
- Make and use simple data collection sheets that involve counting in order to collect data (alone and/or as a member of a group or team) to answer questions posed by the teacher and the class.

#### 5.2 Organizing, recording and summarizing data
- Organise and record data, using tally marks and tables.
- Examine ungrouped numerical data to determine the mode of the data set.

#### 5.3 Displaying Data
- Draw a variety of graphs to display and interpret ungrouped data including:
  a) pictographs with a many-one correspondence and appropriate keys (e.g. one picture represents 10 people)
  b) bar graphs (emphasize the correct labelling of the horizontal & vertical axes)

#### 5.3 Interpreting Data
- Critically read and interpret data represented in a variety of ways (including own representations and representations in the media – both words and graphs) to draw conclusions and make predictions sensitive to the role of:
  a) real life situations (e.g. rural or urban)
  b) categories within the data (e.g. gender and race)
  c) other human rights issues.

#### 5.5 Probability
- Compare, classify and order events from daily life on a scale from certain that they will happen to certain that they will not happen.
- List possible outcomes for simple experiments (including tossing a coin, rolling a die and spinning a spinner).
- Count the frequency of actual outcomes for a series of trials.

### Formal Assessments
- **1 Test**
- **1 Final examination**

(To be completed during Term 4)
### TERM 1 – Grade 6

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numbers, Operations and Relationships</strong></td>
<td><strong>1.1 Whole Numbers</strong></td>
<td>Count forwards in a variety of intervals including 99, 999, 250, 500 etc.</td>
<td>Every day</td>
</tr>
<tr>
<td><strong>Whole number counting</strong></td>
<td><strong>1.1 Whole Numbers</strong></td>
<td>Do mental addition and subtraction.</td>
<td>Every day</td>
</tr>
</tbody>
</table>
| **Mental calculations : Addition and Subtraction** | **1.1 Whole Numbers** | Recognise the place values of digits in whole numbers to at least 9 digits.  
Emphasize the difference between the place value and the value of digits in numbers. | 1 week |
| **Place values** | **1.1 Whole Numbers** | Arrange numbers in ascending order or descending order of size.  
Examples:  
a)  8 569 231 < 8 676 321 < 8 765 321 < 8 965 321  
b)  8 765 321 > 8 765 231 > 8 676 321 > 8 567 231 | |
Numbers, Operations and Relationships

1.1 Whole Numbers

addition

Emphasize that numbers can be added in any order
Example:
5 192 + 4 678 = 4 678 + 5 192

1.1 Whole Numbers

Addition of whole numbers

- Add whole numbers
By breaking down numbers
Example: Calculate: 78 326 + 59 785

- 78 326 + 59 785 = \(70 000 + 50 000 + 8 000 + 9 000 + 300 + 700 + 20 + 80 + 6 + 5\)
  = \(120 000 + 17 000 + 1 000 + 100 + 11\)
  = \(137 000 + 1 111\)
  = 138 111

- or

  6 + 5 = 11
  and 20 + 80 = 100
  and 300 + 700 = 1 000
  and 8 000 + 9 000 = 17 000
  and 70 000 + 50 000 = 120 000
  78 326 + 59 785 = 138 111

- or

  By adding on:
  Example:
  78 326 + 50 000 → 128 326 + 9 000 → 137 326 + 700 → 138 026 + 80 → 138 106 + 5 → 138 111

- or

  Using vertical column-method only after learners fully understand how to add horizontally.
  Example:
  \[
  \begin{array}{c}
  \phantom{0}1 1 1 1 \\
  78 326 \\
  + 59 785 \\
  \hline
  138 111 \\
  \end{array}
  \]

- or

  Use compensation (counter balancing)
  Example:
  \[
  \begin{array}{c}
  78 326 + 59 785 = 78 236 – 115 + 59 785 + 115 \\
  = 78 211 + 59 900 \\
  = 138 111 \\
  \end{array}
  \]

- Uses a range of strategies to check solutions and judge reasonableness of solutions.
### 1.1 Whole Numbers

#### Rounding off whole numbers to the nearest 5, 10, 100 or 1000

- Use a number line to show rounding off.

  **Example:**
  
  a) $97\,452 \approx 97\,450$ correct to the nearest 5  
  b) $97\,452 \approx 97\,450$ correct to the nearest 10  
  c) $97\,452 \approx 97\,500$ correct to the nearest 100  
  d) $97\,452 \approx 97\,000$ correct to the nearest 1000

- Use rounding off to estimate answers:

  **Example:**
  
  Calculate the approximate value of $5\,878 + 3\,295$
  
  $5\,878 + 3\,295 \approx 5\,900 + 3\,300 \approx 9\,200$ to the nearest 100  
  or  
  $5\,878 + 3\,295 \approx 6\,000 + 3\,000 \approx 9\,000$ to the nearest 1 000

#### SUBTRACTION

- Emphasize: That numbers cannot be subtracted in any order

  **Example:**
  
  $3\,000 - 500 \neq 500 - 3\,000$

- Count backwards in a variety of intervals

  **Examples:**
  
  a) Count backwards in 200s from 5\,836 to 4\,636  
  b) Count backwards in 99s from 5\,836 to 5\,440

- Recognise and use the converse relationship between addition and subtraction

  **Example:**
  
  If $4\,852 + 697 = 5\,549$ then $5\,549 - 697 = 4\,852$ and $5\,549 - 4\,852 = 697$

#### Subtraction of whole numbers

- Subtract whole numbers

  **Example:**
  
  Calculate $47\,962 - 23\,684$
  
  By breaking down numbers
  
  $47\,962 - 23\,684 = 40\,000 + 7\,000 + 900 + 60 + 2 - 20\,000 - 30\,000 - 600 - 80 - 4$
  
  $= 40\,000 - 20\,000 + 7\,000 - 3\,000 + 800 - 600 + 150 - 80 + 12 - 4$
  
  $= 20\,000 + 4\,000 + 200 + 70 + 8$
  
  $= 24\,278$

---

<table>
<thead>
<tr>
<th><strong>Space and Shape</strong></th>
<th><strong>3.1 The properties of 2-D shapes and 3-D objects</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Recognise, visualise and name 2-D shapes.</td>
</tr>
<tr>
<td></td>
<td>• Describe and classify 2-D shapes in terms of the length of sides and sizes of vertex angles.</td>
</tr>
<tr>
<td></td>
<td>• Investigate the similarities and differences between rectangles and parallelograms.</td>
</tr>
<tr>
<td></td>
<td>• Learn to measure the sizes of angles.</td>
</tr>
<tr>
<td></td>
<td>• Recognise, visualise and name 3-D objects including cubes, rectangular prisms, triangular prisms, cylinders, spheres and pyramids.</td>
</tr>
<tr>
<td></td>
<td>• Describe and classify 3-D objects in terms of the geometric properties including the number of faces, vertices and edges.</td>
</tr>
<tr>
<td></td>
<td>• Investigate the similarities and differences between tetrahedrons and pyramids.</td>
</tr>
<tr>
<td></td>
<td>• Make 3-D models of objects using drinking straws to make a skeleton.</td>
</tr>
<tr>
<td></td>
<td>• Make 3-D models using nets provided by the teacher.</td>
</tr>
<tr>
<td></td>
<td>• Use a pair of compasses to draw circles, patterns in circles and patterns with circles.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Numbers, Operations and Relationships</strong></th>
<th><strong>1.1 Whole Numbers</strong></th>
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<tbody>
<tr>
<td><strong>MULTIPLICATION</strong></td>
<td><strong>Emphasize:</strong> that numbers can be multiplied in any order</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> Calculate</td>
</tr>
<tr>
<td></td>
<td>$47 \times 32 = 32 \times 47$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Curriculum and Assessment Policy Statement (CAPS): Mathematics – Intermediate Phase</strong></th>
<th><strong>Or</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$47,962 - 20,000 = 27,962 - 3,000 = 24,962 - 600 = 24,362 - 80 = 24,282 - 4 = 24,278$</td>
<td>$27,962 - 3,000 - 600 - 80 - 4 = 24,962 - 600 - 80 - 4$</td>
</tr>
<tr>
<td>$47,962 - 20,000 - 3,000 - 600 - 80 - 4 = 24,962 - 3,000 - 600 - 80 - 4$</td>
<td>$24,362 - 80 - 4$</td>
</tr>
<tr>
<td>$= 24,362 - 80 - 4$</td>
<td>$= 24,282 - 4$</td>
</tr>
<tr>
<td>$= 24,278$</td>
<td>$= 24,278$</td>
</tr>
</tbody>
</table>

**Solving problems involving addition and subtraction**

- Solve problems that involve addition & subtraction in real life situation.
- **Examples:**
  - a) Increase 46,793 by 78,071
  - b) What must be added to 58,923 to get 105?
  - c) A motorist travelled 465 km on Monday and 382 km on Tuesday. How far must he travel on Wednesday to complete a journey of 1,137 km?
### 1.1 Whole Numbers

#### Mental calculations
- Calculations involving multiplications of whole numbers to at least $12 \times 12$.

**Example:**
The multiples of 9 between 80 and 110 are 81, 90, 99, 108.

#### Multiples of factors of at any 2-digit and 3-digit numbers
- Determine multiples and factors.

**Examples:**
- a) Write down the first five multiples of 62.
- b) Find all the factors of 256.
- c) Write down the first 8 prime numbers.
- d) Write down the prime numbers that are factors of 36.

#### Prime numbers to at least 100
- Multiply 4-digit whole numbers by 3-digit whole numbers.

**Example:**
To calculate $4362 \times 108$

1. $4362 \times 12 \times 9 = 52344 \times 9 = 471096$ (use the factors of 108)
2. $4362 \times 100 + 4362 \times 8 = 436200 + 34968 = 471096$
3. $4362 \times 12 \times 108 = 52344 \times 9 = 471096$ (use compensation)

- Use the vertical column method

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4362 \times 108$</td>
<td>$471096$</td>
</tr>
</tbody>
</table>

- Use a range of strategies to check solutions and judge reasonableness of solutions.
- Use estimation to round off answers.

**Example:**
Estimate the value of $793 \times 184$

$793 \times 184 \approx 800 \times 180 \approx 147200$ to the nearest 100
### Numbers, Operations and Relationships

#### 1.1 Whole Numbers

**DIVISION**

- **Emphasize** that numbers cannot be divided in any order.
  - **Example:**
    
    \[
    324 \div 18 \neq 18 \div 324
    \]

- **Calculate quotients using knowledge of multiplication tables.**

**Mental mathematics**

- **Describe and use the divisibility rules for 2, 5, 10, 100 and 1000.**
  - **Example:**
    
    Investigate the divisibility rules for 3, 4, 6, 8 and 9.

- **Divide whole numbers by 10, 100, 1000 and their multiples.**
  - **Examples:**
    
    \[
    \begin{align*}
    12800 \div 100 &= 128 \\
    12800 \div 1000 &= 12 \text{ remainder } 800
    \end{align*}
    \]

- **Divide at least 4-digit by 3-digit whole numbers**
  - **Examples:**
    
    Calculate: 34 848 ÷ 132
    
    \[
    \begin{align*}
    34848 \div 132 &= 34848 \div 12 + 11 = 2904 + 11 = 264 \\
    34848 \div 132 &= 17424 + 66 = 8712 + 33 = 2904 + 11 = 264
    \end{align*}
    \]
    
    (using the factor-method)
    
    or
    
    (halving-method)

- **Divide at least 4-digit by 3-digit whole numbers**
  - **Examples:**
    
    \[
    \begin{align*}
    793 \times 184 &= 793 \times 200 = 158600 \text{ to the nearest } 100 \\
    000 \times 184 &= 184000 \text{ to the nearest } 1000
    \end{align*}
    \]

#### Formal Assessments

(to be completed during Term 1)

- **2 Tests**
- **1 Task**

**TERM 2 – Grade 6**

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
</table>
| Numbers, Operations and Relationships | 1.1 Whole Numbers | **DIVISION** | Emphasize that numbers cannot be divided in any order.  
**Example:**  
\[
324 \div 18 \neq 18 \div 324
\] | Every day |

| | | **Mental mathematics**  
**Divisibility rules** | **Describe and use the divisibility rules for 2, 5, 10, 100 and 1000.**  
**Example:**  
Investigate the divisibility rules for 3, 4, 6, 8 and 9. | |

| | | **1.1 Whole Numbers**  
**Division of at least 4-digit numbers by 3-digit whole numbers** | **Divide whole numbers by 10, 100, 1000 and their multiples.**  
**Examples:**  
\[
\begin{align*}
12800 \div 100 &= 128 \\
12800 \div 1000 &= 12 \text{ remainder } 800
\end{align*}
\]  
**Divide at least 4-digit by 3-digit whole numbers**  
**Examples:**  
Calculate: 34 848 ÷ 132  
\[
\begin{align*}
34848 \div 132 &= 34848 \div 12 + 11 = 2904 + 11 = 264 \\
34848 \div 132 &= 17424 + 66 = 8712 + 33 = 2904 + 11 = 264
\end{align*}
\] (using the factor-method)  
or  
(removal of the factor-method) | 2 weeks |
### Numbers, Operations and Relationships

**or use repeated subtraction**

\[
\begin{align*}
34 848 & \quad - 26 400 \quad \Rightarrow \quad 132 \times 200 \\
& \quad - 7 920 \quad \Rightarrow \quad 132 \times 60 \\
& \quad - 528 \quad \Rightarrow \quad 132 \times 4 \\
& \quad 0
\end{align*}
\]

Then \(34 848 \div 132 = 200 + 60 + 4 = 264\)

**or Use long division method:**

\[
\begin{align*}
34 848 & \div 132 \\
\hline
264 & \quad - 26 400 \quad \Rightarrow \quad 132 \times 200 \\
& \quad - 8 480 \\
& \quad - 7 920 \quad \Rightarrow \quad 132 \times 60 \\
& \quad - 528 \quad \Rightarrow \quad 132 \times 4 \\
& \quad 0
\end{align*}
\]

- Uses a range of strategies to check solutions and judge reasonableness of solutions.

### 1.1 Whole Numbers

#### Multiple operations with whole numbers

- Calculations involving addition and/or subtraction, multiplication and/or division
  - **Examples:**
    a) \(246 + (54 ÷ 6) = 246 + 9 = 255\)
    b) \((246 + 54) ÷ 6 = 300 ÷ 6 = 50\)
    c) \(23 \times 4 - 4 \times 3 = 92 - 12 = 80\) by emphasizing the order of operations
- Solve or complete number sentences by inspection or by trial-and-improvement, checking solution by substitution
  - **Example:**
    \(2 \times t - 8 = 0\) means \(t = 4\).

### 1.1 Whole Numbers

#### Problems involving division

- Problems that involve division in real life situations
  - **Examples:**
    a) The product of 2 numbers is 3 080. One of the numbers is 28. Calculate the other number.
    b) Which number is 25 times smaller than 3 125?
    c) In a division sum, the dividend \(x\) is divided by 9 giving a quotient of 12 and a remainder of 7. Find the value of \(x\)
    d) 18 apple trees are planted in each of 24 rows. If the trees were planted in 16 equal rows, calculate how many trees there would be in each row.

1 week
### 1.2 Fractions

#### Common fractions
- Recognise, order and use equivalent forms of common fractions with 1-digit or 2-digit denominations.
- Write mixed numbers as improper fractions and improper fractions as mixed numbers.
- Add and subtract common fractions with denominators which are multiples of each other.
- Calculate fractional parts of whole numbers.
- Write proper fractions in equivalent form as hundredths.

**Example:**

\[
\frac{1}{5} = \frac{20}{100} \quad \frac{4}{25} = \frac{16}{100}
\]

- Solve problems involving common fractions
  - a) Which is more: \(\frac{2}{5}\) of 75 or \(\frac{3}{8}\) of 84? Determine the difference between the two quantities.
  - b) In the Grade 6 class \(\frac{5}{9}\) are boys. If there are 75 boys, how many girls are in the class?

#### Percentages
- Calculate percentages of quantities in real life situations.
- Solve problems involving percentages

**Example:**

- a) Of the 600 learners in the school, 6% were absent on Friday. What percentage of learners were present? How many learners were present?
- b) Mr Smith was given 15% discount on marked price of a shirt. The shirt was marked R150,00. How much discount did he get?

#### Decimal fractions
- Recognise and use equivalent forms of decimal fractions to at least 2 decimal places.
- Insert decimal fractions on number lines.
- Count forwards and backwards in decimals.
- Add and subtract positive decimal fractions with at least 2 decimal places.
- Multiply decimal fractions by 10, 100 and 1 000.

#### Solving problems involving common fractions and decimal fractions
- Solve problems involving common fractions and decimal fractions in real life situations.

**Examples:**

- a) How many ninths are there in \(\frac{2}{3}\)?
- b) Subtract the sum of 136,5 and 73,7 from the product of 0,263 and 300.
- c) Themba spent \(\frac{1}{5}\) of his pocket money on chips and \(\frac{1}{4}\) on a doughnut. What fraction of his money is left?

---

**Formal Assessments**
- 1 Test
- 1 Task
- 1 Half-yearly examination

(days to be spread for the three formal assessments)
## Measurement

### 4.1 Length, Mass and Capacity
- Use appropriate measuring instruments including rulers, measuring tapes, metre sticks, bathroom scales, kitchen scales, measuring jugs etc. to measure length, mass and capacity.
- Use thermometers to measure temperature
- Estimate, measure, record, compare and order 2-D shapes and 3-D objects using SI units with appropriate precision for:
  - a) Length: mm, cm, m, km
  - b) Mass: g, kg
  - c) Capacity: ml, l
  - d) Temperature: degrees Celsius scale
- Convert units of length, mass and capacity

### 4.1 Length, Mass and Capacity
**Problems involving length, mass & capacity.**
- Solve problems that involve length, mass and capacity in real life situations.
  **Examples:**
  - a) How many pieces of rope, each 55cm long can be cut from a rope 9 metres long? What length of rope will be left over?
  - b) A shopkeeper sells 7.5 kg; 1.25 kg and 10.225 kg of beans out of a 20 g bag of beans. How much beans (in kg) are left in the bag?
  - c) There is a leaking tap in the school yard. 450 ml of water is lost in one hour. How many litres of water will be lost in one day?

### 4.4 Perimeter, Area and Volume
- Investigate and approximate:
  - a) Perimeter using rulers or measuring tapes.
  - b) Area of polygons (using square grids) in order to develop rules for calculating the area of squares and rectangles.
  - c) Volume of 3-D objects in order to develop rules for calculating volumes of rectangular prisms.
  **Example:**
  A rectangular vegetable garden is 3.5 metres long and 2 metres wide. What length of fencing will be needed to fence the vegetable garden?

## Numbers, Operations and Relationships

### 1.6 Financial Mathematics
- Add, subtract, multiply, divide and round off units of money
- Financial mathematics including buying and selling, profit and loss, simple budgets, discount and reading and interpreting accounts.
  **Examples:**
  - a) Mr Dlamini has R 1 925.95 in his bank account. He withdraws R 650.50 and then R 225.25 the next day. How much money is left in his bank account?
  - b) A cell phone costs R 952.20. Alpheus pay a deposit of R 50.00 and then agrees to pay the rest of the amount in four equal monthly payments. How much will his monthly payments be?

### 1.2 Ratio and Rate
- Solve problems that involve:
  - Comparing two or more quantities of the same kind (ratio)
  - Comparing two quantities of different kinds (rate e.g. wages/day)
  **Examples:**
  - a) Write the ratio of 400g to 2kg in the simplest form.
b) If 8 pens cost R103.60, calculate the cost of:
   i) 4
   ii) 12
   iii) 5 of the same pens.

c) Sam travelled 304 km in 4 hours. Calculate his average speed per hour.
d) Which is the cheapest? 6 oranges for R3.30 or 9 oranges for R5.22?

<table>
<thead>
<tr>
<th>Formal Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(to be completed during Term 3)</td>
</tr>
<tr>
<td>• 2 Tests</td>
</tr>
<tr>
<td>• 1 Task</td>
</tr>
</tbody>
</table>

1 week
(days to be spread for the three formal assessments)

**TERM 4**

**TERM 4 – Grade 6**

<table>
<thead>
<tr>
<th>CONTENT AREA</th>
<th>CONTENT</th>
<th>CLARIFICATION or NOTES</th>
<th>DURATION (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space and Shape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Transformations</td>
<td>• Recognise, describe and perform translations, reflections and rotations using 2-D shapes and 3-D objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Draw lines of symmetry in 2-D figures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Draw enlargements and reductions of triangles and quadrilaterals using grid paper to compare their size and shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Views of simple 3-D objects</td>
<td>Draw and interpret sketches of simple 3-D objects from different positions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4 Locate position on a grid or map</td>
<td>Locate positions on a coded grid, describe how to move between positions on the grid, and recognise maps as grids.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Patterns and Functions         |                                                                          |                        |                     |
| 2.1 Numeric and Geometric patterns | • Look for a relationship or rule:                                       |                        |                     |
|                               | a) Represented in diagrammatic form                                      |                        |                     |
|                               | b) Not limited to sequences involving constant difference or ratio        |                        |                     |
|                               | c) Of the learner’s own creation                                         |                        |                     |
|                               | d) represented in tables.                                                |                        |                     |
|                               | • Describe observed relationships or rules in own words.                 |                        |                     |
|                               | Examples:                                                                |                        |                     |
|                               | Determine and describe the rule in your own words:                       |                        |                     |
|                               | a) 2, 4, 8, 16 ...                                                       |                        |                     |
|                               | b) 27, 9, 3, 1 ...                                                       |                        |                     |
|                               | c) 1, 4, 7, 11 ...                                                       |                        |                     |
|                               | d) ; ; ; ; ; ...                                                         |                        |                     |

2 weeks
2.2 Input and Output values

- Determine output values for given input values or input values for given output values using
  a) verbal descriptions
  b) flow diagrams
  c) tables

Examples:

a) Describe the rule in your own words and use the rule to calculate the missing input and output values.

b) Describe the relationship between the numbers in the top row and the bottom row in the table. Use the rule to calculate the missing numbers.

<table>
<thead>
<tr>
<th>Input</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>25</td>
</tr>
</tbody>
</table>

- Determine the equivalence of different descriptions of the same rule.

Measurement

4.2 Time

- Read, tell and write analogue, digital and 24-hour time to at least the nearest minute and second.
- Solve problems involving calculation and conversion between appropriate time units including: time zones and differences.

2 weeks

Data handling

5.1 Collecting of data

- Posing questions about own school and family environment
- Identify appropriate data sources
- Using simple data collection sheets requiring tally marks) and simple questionnaires (yes/no type response) to answer questions.
- Collect data to answer questions

5.2 Organizing, recording and summarizing data

- Organizes and records data using:
  a) tally marks
  b) tables
- Distinguishing between samples and populations
- Examining ungrouped numerical data to determine the mode and the median

3 weeks

5.3 Displaying data

Drawing a variety of graphs to display and interpret data including Pictographs (many-to-one correspondence) and Bar graphs
| 5.4 Interpreting data | Critically reading and interpreting data presented in a variety of ways in order to draw conclusions and make predictions sensitive to the role of:  
  a) real life situations (e.g. rural, urban, provincial or national);  
  b) categories within the data (e.g. age, gender, race);  
  c) any other human rights issues. |
|-----------------------|--------------------------------------------------------------------------------------------------|
| 5.5 Probability | Predicting the likelihood of events based on observation and places them on a scale from impossible, to certain.  
  List possible outcomes for simple experiments:  
  a) tossing a coin,  
  b) rolling a die,  
  c) spinning a spinner  
  Counting the frequency of actual outcomes for a series of trials. |

**Formal Assessments**
(to be completed during Term 4)
- Revision
- 1 Test
- 1 Final Examination

2 weeks
(days to be spread for the two formal assessments)
4.1. Forms and guidelines for assessment

The following general principles apply:

4.1.1. The requirements for assessment in Intermediate Phase Mathematics are:

- 6 Tests
- 1 Half-yearly Examinations; and 1 Final Examination
- 3 Tasks: (1 Assignment, 1 Project and 1 Investigation).

4.1.2. Tests and examinations must be done under supervision and assessed using a marking memorandum. Care needs to be taken to ask questions at all four cognitive levels: approximately 25% knowledge, 45% routine procedures, 20% complex procedures and 10% problem solving. Tests must be out of at least 25 marks each. Midyear/Half-yearly examinations must be at least out of 30 marks for grades 4 and 5 and 40 marks for grade 6. Final examinations must be out of at least 40 marks for Grade 4, 50 marks for Grade 5 and 60 marks for Grade 6.

4.1.3. One assignment per year is required. Assignments are generally extended pieces of work completed at home. They can be collections of past questions, but should focus on the more demanding work as any resource material can be used, which is not the case in a task that is done in class under strict supervision.

4.1.4. One project should be set in a year. The assessment criteria must be clearly indicated on the project specification and should focus on the Mathematics involved and not on duplicated pictures and facts copied from reference material. Good projects contain the collection and display of real data, followed by deductions that can be substantiated.

4.1.5. One investigation per year is required. An investigation must promote critical and creative thinking. It can be used to discover rules or concepts and may involve inductive reasoning, identifying or testing patterns or relationships, making conclusions, and establishing general trends. To avoid having to assess work which is copied without understanding, it is recommended that whilst initial investigation could be done at home, the final write up should be done in class, under supervision, without access to any notes. Investigations are marked with rubrics which can be specific to the task, or generic, listing the number of marks awarded for each skill, for example:

- Organizing and recording ideas and discoveries using, for example, diagrams and tables.
• Communicating ideas with appropriate explanations.
• Calculations showing clear understanding of mathematical concepts and procedures.
• Generalizing and making conclusion

Assessment in Mathematics Intermediate Phase comprises of Continuous Assessment (CASS) and a final examination:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Assessment (CASS)</td>
<td>50%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Minimum requirements for CASS are:

<table>
<thead>
<tr>
<th>Assessment Form</th>
<th>Number per Year</th>
<th>Minimum Requirements</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests</td>
<td>6</td>
<td>• 2 tests in each of Term 1 and Term 3</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 1 test in each of Term 2 and Term 4</td>
<td></td>
</tr>
<tr>
<td>Examinations</td>
<td>1</td>
<td>A midyear/ half-yearly examination in the second term</td>
<td>25%</td>
</tr>
<tr>
<td>Assessment Tasks</td>
<td>3</td>
<td>1 Assignment ; 1 Investigation; and 1 Project (spread in the first three terms)</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>To be completed before the final examination</td>
<td>100%</td>
</tr>
</tbody>
</table>
### ANNUAL ASSESSMENT PLAN

<table>
<thead>
<tr>
<th>GRADE</th>
<th>TERM 1</th>
<th>Weighting</th>
<th>TERM 2</th>
<th>Weighting</th>
<th>TERM 3</th>
<th>Weighting</th>
<th>TERM 4</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Test</td>
<td>10%</td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td>Test</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td>Midyear/half yearly Examination</td>
<td>25%</td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Test</td>
<td>10%</td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td>Midyear/half-yearly Exam</td>
<td>25%</td>
<td>Test</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
<td>Test</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td>Midyear/half-yearly Exam</td>
<td>25%</td>
<td>Assignment/Project/Investigation</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Final Examination 50%

### 4.2. Mathematical skills

To develop essential mathematical skills the learner should:
- Develop the correct use of the language of Mathematics.
- Develop number vocabulary, number concept and calculation and application skills.
- Learn to listen, communicate, think, reason logically and apply the mathematical knowledge gained.
- Learn to investigate, analyse, represent and interpret information.
- Learn to pose and solve problems.
- Build an awareness of the important role that Mathematics plays in real life situations including the personal development of the learner.
## Cognitive levels

Descriptors for each level and the approximate percentages of tasks, tests and examinations that should be at each level are given below:

<table>
<thead>
<tr>
<th>Cognitive levels</th>
<th>Description of skills to be demonstrated</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>• Estimation and appropriate rounding of numbers&lt;br&gt;• Straight recall&lt;br&gt;• Identification and direct use of correct formula.&lt;br&gt;• Use of mathematical facts&lt;br&gt;• Appropriate use of mathematical vocabulary.</td>
<td>1. Write down the next three numbers in the sequence: 103; 105; 107…[Grade 4]&lt;br&gt;2. Determine the factors of 64. [Grade 5]&lt;br&gt;3. Write down the prime numbers that are factors of 36. [Grade 6]</td>
</tr>
<tr>
<td>Routine procedures</td>
<td>• Perform well-known procedures&lt;br&gt;• Simple applications and calculations which might involve many steps&lt;br&gt;• Derivation from given information may be involved&lt;br&gt;• Identification and use (after changing the subject) of correct formula&lt;br&gt;• Generally similar to those encountered in class.</td>
<td>1. Determine the value for (x) if (x + 4 = 10). [Grade 4]&lt;br&gt;2. Use three different techniques of calculating (488 \div 16). [Grade 5]&lt;br&gt;3. Calculate: (\frac{1}{3} + \frac{3}{10} - \frac{1}{2}). [Grade 6]</td>
</tr>
<tr>
<td>Complex procedures</td>
<td>• Problems involve complex calculations and/or higher order reasoning&lt;br&gt;• Do investigations to describe rules and relationships.&lt;br&gt;• There is often not an obvious route to the solution&lt;br&gt;• Problems need not be based on a real world context&lt;br&gt;• Could involve making significant connections between different representations&lt;br&gt;• Require conceptual understanding</td>
<td>1. Peggy is 4 years old and Jock is 8 years old. Determine the ratio between their ages. Write the ratio in simplest fractional form. [Grade 4]&lt;br&gt;2. Investigate the properties rectangles and squares to identify similarities and differences. [Grade 5]&lt;br&gt;3. There were 20 sweets in the packet. William and his friend ate (\frac{2}{5}) of the sweets. How many sweets are left? [Grade 6]</td>
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<td>Problem solving</td>
<td>• Unseen, non-routine problems (which are not necessarily difficult)&lt;br&gt;• Higher order understanding and processes are often involved&lt;br&gt;• Might require the ability to break the problem down into its constituent parts</td>
<td>1. The sum of three consecutive whole numbers is 27. Find the numbers. [Grade 4]&lt;br&gt;2. Heidi divided a certain number by 16. She found an answer of 246 with a remainder of 4. What is the number? [Grade 5]&lt;br&gt;3. Busi has a bag containing three coloured balls: 1 blue, 2 red ball and 3 yellow balls. She puts her hand in the bag and draws a ball. What is the chance that she will draw a red ball? Write the answer in simplest fractional form. [Grade 6]</td>
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