



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**Curriculum and Assessment Policy
Statement: Technical Occupational**

Year 1 – 4

MATHEMATICS

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SECTION 1:

INTRODUCTION TO THE CURRICULUM AND ASSESSMENT POLICY STATEMENT: TECHNICAL OCCUPATIONAL

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SECTION 2:

INTRODUCTION TO MATHEMATICS

2.1 What is Mathematics?

Mathematics is a language that makes use of symbols and notations to describe numerical, geometric and graphical relationships. It is a human activity that involves observing, representing and investigating patterns and quantitative 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 Topics to be studied in Mathematics.

Mathematics topics are organised according to the following five Content Areas:

1. Numbers, Operations and Relationships;
2. Patterns, Functions and Algebra;
3. Space and Shape (Geometry);
4. Measurement; and
5. Data Handling.

2.3 Specific Aims:

The teaching and learning of Mathematics aims to develop

- 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.
- 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)

2.4 Specific 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.

2.5 Requirements for Mathematics as a subject

2.4.1. Time allocation

- (a) The total number of hours allocated for Mathematics is 3 hours in a five day cycle.
- (b) The table below represents the weighting of Mathematics topics for Year 1 to Year 4 calculated out of 30 weeks for Year 1 and 32 weeks for Years 3 to 4 (excluding weeks for formal summative assessment):

WEIGHTING OF TOPICS				
Content Areas	Year 1	Year 2	Year 3	Year 4
Numbers, Operations and Relationships	40%	38%	58%	52%
Patterns, Functions and Algebra	13%	9%	9%	16%
Space and Shapes (Geometry)	10%	19%	19%	16%
Measurement	30%	28%	11%	10%
Data Handling	7%	6%	3%	6%

- (c) The weighting of mathematics topics serves two primary purposes:
- guidance regarding the time needed to adequately address the content within each topic, and
 - guidance on the spread of topics in the examination (especially end-of-the year summative assessment).

2.4.2. Resources

Resources that each learner should have:

- Exercise book (1 x 72 pages)
- Book with squared paper

- Scissor
- Glue
- Geometry set (Compass, protractor, 30/60° set square and 45° set square)
- Calculator (should have squares and square roots)

2.4.3. Infrastructure, Resources and finances

(a) Infrastructure

Since this curriculum is skill-driven, the education sector at all levels must ensure that teachers have the necessary infra-structure, resources (including financial resources) for quality teaching and learning.

(b) Minimum resource requirements for Mathematics

Consumable equipment

- Modelling clay
- A calendar for the current year
- Workbooks
- Paper for copying worksheets

Non-Consumable equipment

- Large Geometry set (for the teachers)
- Counters
- Large dice
- A big counting frame (e.g. abacus)
- A height chart
- number grid posters: 1 – 100 and 101 - 200
- Different number lines (vertical and horizontal)
- A set of playing cards
- Flash cards
- Play money, coins and notes
- A analogue wall clock
- Vocabulary cards
- Balance scale
- Building blocks (e.g. Dienes blocks)
- Volume/capacity set

- Large and small 3-D objects
- Squares (made of plastic or cardboard).
- 2-D shapes (posters)
- Tangrams
- Geo-board
- Wooden pattern blocks
- Fraction set (in different colours)

(c) Finances

Budget and inventory

A budget must be allocated for the subject. The amount will be determined by the number of learners taking the subject across all the years and the nature of the assessment required as stipulated in the curriculum. The budget needs to be revised annually and must consider all resources needed per year. A stock inventory must be maintained by the teacher and verified annually by a Senior Management Team member.

2.6 Career opportunities

Mathematics forms the basis of all calculations used in the Skills and Vocational study areas. A sound knowledge of the core mathematical concepts will support learners in any career choice.

TIME ALLOCATION PER TOPIC:

TIME ALLOCATION PER TOPIC: YEAR 1				
WEEK	TERM 1	TERM 2	TERM 3	TERM 4
	Topic	Topic	Topic	Topic
	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)
1	Baseline Assessment Counting Number symbols Number names Money Time Positions, orientation and views 3D objects 2D shapes Length Mass	Whole numbers Counting, ordering, comparing, representing and place value (4-digit numbers) Multiples	Whole numbers Counting, ordering, comparing, representing and place value (4/5-digit numbers)	Whole numbers Counting, ordering, comparing, representing and place value (5-digit numbers) Whole numbers: Addition and subtraction (5-digit numbers)
2		Whole numbers Addition and subtraction (4-digit numbers) Number sentences	Whole numbers Addition and subtraction (4/5-digit numbers) Number sentences	Whole numbers Multiplication (3-digit by 1- digit) and division (3-digit by 1- digit) Number sentences
3	Whole numbers Counting, ordering, comparing, representing and place value (3-digit numbers)	Common fractions	Properties of 3-D objects Viewing of objects	Common Fractions
4	Numeric and Geometric patterns (Numeric only)		Properties of 2-D shapes Symmetry	
5	Whole numbers addition and subtraction (3-digit numbers) Number sentences	Whole numbers Multiplication (2/3-digit by 1- digit) and division (2-digit by 1- digit)	Numeric and Geometric patterns (Geometric only)	Length
6	Whole numbers multiplication and division (1-digit by 1- digit)	Length	Perimeter, surface area and volume	Data handling
7	Time	Length		Data handling
8		Mass	Capacity / Volume	Transformation Position and movement
9	ASSESSMENT	ASSESSMENT	ASSESSMENT	ASSESSMENT
10	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT

TIME ALLOCATION PER TOPIC: YEAR 2				
Week	Term 1	Term 2	Term 3	Term 4
	Topic	Topic	Topic	Topic
	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)
1	Whole numbers: Counting, ordering, comparing, representing and place value (4-digit numbers)	Whole numbers: Counting, ordering, comparing, representing and place value (4/5-digit numbers)	Whole numbers: Counting, ordering, comparing, representing and place value (5/6-digit numbers)	Whole numbers: Counting, ordering, comparing, representing and place value (6-digit numbers)
2	Number sentences	Whole numbers: Addition and subtraction (5/6-digit numbers)	Length	Whole numbers: Addition and subtraction (6-digit numbers)
3	Whole numbers: Addition and subtraction (4-digit numbers)	Common fractions		Whole numbers: Multiplication (3-digit by 2-digit)
4	Whole numbers: Multiplication (2-digit by 2-digit) and division (2-digit by 2-digit)	Decimal fractions	Mass	Perimeter, surface area and volume
5	Time	Numeric patterns and Geometric patterns	Properties of 2-D shapes Symmetry	
6		Properties of 3-D objects Viewing of objects	Temperature	
7	Properties of 2-D shapes	Construction of geometric figures	Data handling	Transformations
8	Capacity / volume	Whole numbers: Division (3-digit by 2-digit) Number sentences		Common fractions
9	ASSESSMENT	FORMAL ASSESSMENT	ASSESSMENT	FORMAL ASSESSMENT
10	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT

TIME ALLOCATION PER TOPIC: YEAR 3				
WEEK	TERM 1	TERM 2	TERM 3	TERM 4
	Topic	Topic	Topic	Topic
	Mental Mathematics(10 minutes daily)	Mental Mathematics(10 minutes daily)	Mental Mathematics(10 minutes daily)	Mental Mathematics(10 minutes daily)
1	Whole numbers: counting, ordering, comparing, representing and place value (6/7-digit numbers)	Common fractions	Whole numbers: counting, ordering, comparing, representing and place value(7/8-digit numbers) Length Mass	Whole numbers: counting, ordering, comparing, representing and place value (9-digit numbers) Capacity/Volume Time Temperature
2	Whole numbers: addition and subtraction (6-digit numbers)		Integers	Whole numbers: multiplication and division (4-digit by 3-digit)
3	Whole numbers: Multiples and factors	Decimal fractions	Exponents	Area and Perimeter,
4				Surface area and Volume
5	Whole numbers: multiplication (3-digit by 2- digit)	Whole numbers All four main operations		Geometry of 2D shapes
6	Whole numbers: division (3-digit by 2- digit)	Whole numbers Finance	Algebraic language	Symmetry Transformations
7	Numeric and geometric patterns		Construction of Geometric figures	Graphs
8	Geometry of straight line	Geometry of 3D objects Viewing of objects		Data handling
9	ASSESSMENT	ASSESSMENT	ASSESSMENT	ASSESSMENT
10	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT

TIME ALLOCATION PER TOPIC: YEAR 4				
WEEK	TERM 1	TERM 2	TERM 3	TERM 4
	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)	Mental Mathematics (10 minutes daily)
1	Whole numbers with all four operations	Common Fractions	Data handling	Revision of work done in term 1
2			Decimal fraction	Revision of work done in term 2 except graphs and finance
3	Whole numbers Multiples and factors	Number Sentences Algebraic expressions	Numeric and Geometric patterns	Revision on work done in term 3 except finance
4		Number Sentences Algebraic equations	Area and Perimeter,	Revision of graphs and finances
5	Integers	Geometry of 2D shapes	Geometry of 3-D objects Surface area and Volume	EXTERNAL MODERATION OF SCHOOL BASED ASSESSMENT AND FINAL EXTERNAL PEN ON PAPER ASSESSMENT
6			Surface area and Volume	
7	Exponents	Graphs	Finance	
8		Finance		
9	ASSESSMENT	ASSESSMENT	ASSESSMENT	
10	FORMAL ASSESSMENT	FORMAL ASSESSMENT	FORMAL ASSESSMENT	