

CONTENTS

	Page
Introduction	3
Aims	4
Assessment objectives	5
Approaches	6
Specification grid	7
Scheme of assessment	8
Curriculum content	9
Grade descriptions	12

1. INTRODUCTION

The Primary Certificate (SPC) syllabus is designed as a seven-year course for examination in Grade 7. The syllabus assumes that learners have acquired knowledge, understanding and skills in their everyday life activities at home and in the community. The curriculum content of the syllabus is arranged into topics covering four areas: Number & Measurement; Shape, Position and Space; Information Handling and Problem Solving but it is treated throughout in a holistic way. It is intended to promote imaginative and innovative styles of teaching and learning so that the course is enjoyable for all learners, and is designed to assess what learners know, understand and can do. As such, it forms the basis for the development of fundamental tools for learners to progress to higher-level courses of mathematical studies.

Learners will follow **one basic curriculum**. The curriculum is examined by two written papers and continuous assessment done during normal classroom activities. The papers are described in the Scheme of Assessment.

The syllabus will act as an instrument that will direct instruction and assessment in the classroom, as well as guide examinations. It is structured such that it dovetails with the Junior Certificate [JC].

The main sections of the syllabus are:

- ✚ Aims
- ✚ Assessment objectives
- ✚ Scheme of Assessment
- ✚ Curriculum Content
- ✚ Grade Descriptions

2. AIMS

The aims set out below describe the National Curriculum Educational Goals for a course in Mathematics for Primary and are the same for all learners. They are not written in order of priority.

The aims are to enable students to:

1. develop their mathematical knowledge and oral, written and practical skills in a way which encourages confidence and provides satisfaction and enjoyment;
2. read mathematics and write and talk about the subject in a variety of ways;
3. develop a feel for number, carry out calculations and understand the significance of the results obtained;
4. apply mathematics in everyday situations and develop an understanding of the part which mathematics plays in the world around them;
5. solve problems, present the solution clearly, check and interpret the results;
6. recognize when and how a situation may be represented mathematically, identify and interpret relevant factors and, where necessary, select an appropriate mathematical method to solve the problem;
7. use mathematics as a means of communication with emphasis on the use of clear expression;
8. develop the ability to apply mathematics in other subjects;
9. develop the abilities to reason logically;
10. appreciate patterns and relationships in mathematics;
11. produce and appreciate imaginative and creative work arising from mathematical ideas;
12. develop their mathematical abilities by considering problems and conducting individual and cooperative enquiry and experiment, including extended pieces of work of a practical and investigative kind;
13. acquire a foundation appropriate to their further study.

3. ASSESSMENT OBJECTIVES

There is a single Assessment Objective in Mathematics

TECHNIQUE WITH APPLICATION

A description of the assessment objective follows.

Learners should be able to:

1. organise, interpret and present information accurately in written, tabular, graphical and diagrammatic forms;
2. perform calculations by suitable methods;
3. understand systems of measurement in everyday use and make use of them in the solution of problems;
4. estimate, approximate and work to degrees of accuracy appropriate to the context;
5. use mathematical and other instruments to measure and to draw to an acceptable degree of accuracy;
6. interpret, transform and make appropriate use of mathematical statements expressed in words or symbols;
7. recognise and use spatial relationships in two and three dimensions;
8. recall, apply and interpret mathematical knowledge in the context of everyday situations;
9. make logical deductions from given mathematical data;
10. recognise patterns and structures in a variety of situations, and form simple generalisations;
11. respond to a problem relating to a relatively unstructured situation by translating it into an appropriately structured form;
12. analyse a problem, select a suitable strategy and apply an appropriate technique to obtain its solution;
13. apply combinations of mathematical skills and techniques in problem solving;
14. set out mathematical work, including the solution of problems, in a logical and clear form using appropriate symbols and terminology.

4. APPROACHES

The curriculum content of the syllabus is arranged into topics covering four areas: Number & Measurement; Shape, Position and Space; Information Handling and Problem Solving but it is treated throughout in a holistic way.

Number & Measurement

Number is the foundation of mathematics. Number enables us to interpret and represent the world in which we live. In Number, learners develop their understanding of the concept of number and competence in using mental and written strategies for solving problems

Mathematics has been defined as the study of patterns. Learning to recognise, analyse, describe and represent patterns and number relationships connects math to the world and helps us to appreciate fully the value of such pleasures as art, science etc. Maths concepts formerly taught only in basic algebra courses are increasingly part of the culture and vocabulary of modern life.

Being able to see and use patterns has been identified as a fundamental skill needed for developing mathematical understanding. Algebra serves as a bridge between arithmetic and more broadly generalise mathematical situations. These generalisations can be expressed in words, tables and charts. In later years learners will use the notation of formulas and graphs to represent these generalisations.

Hands-on, interactive investigations, using non-standard and standard units, help learners develop an understanding of the many measurable attributes of physical objects. Measurement including length, time, temperature, capacity, weight, mass area, volume, and angle will benefit from this approach. This approach helps build an accessible measurement vocabulary and a meaningful comprehension of what it means to measure.

Information Handling

Numeracy and literacy learning is linked by Statistics and Probability. Numbers, logical reasoning and texts interweave to describe phenomena visually, numerically and verbally in what is termed data.

Reading and recording data is very important in our daily lives. We learn about the power of evidence as we develop the skills to make statements and evaluate arguments based on data. We learn the power of the question and the framer of the question when we collect and represent data, and we learn that sometimes true, sometimes false, pictures are created when we express data into statistics. Data is a powerful descriptive tool.

Shape, Position and Space

Geometry helps us represent in an orderly fashion what we see in our world. Whether we are shopping or designing, we continually bump up against these mathematical organisers.

In Geometry, learners learn about the features, properties and representation of two dimensional shapes and three dimensional objects.

Problem Solving

Word problems which reflect the social life and related to the environment of the child are of particular importance. It is the primary goal of all mathematics instruction and an integral part of all mathematical activity.

In problem solving, learners learn to solve routine and non-routine problems using the problem solving [model] steps. Problem solving is not a distinct topic but a process that should permeate the entire program and provide the context in which concepts and skills can be learned.

SPECIFICATION GRID

Objective Number	Short-answer questions	Structured/longer answer questions	<i>Paper 1</i>	<i>Paper 2</i>
1 and 2	✓	✓	✓	✓
3 to 7	✓	✓	✓	✓
8	✓	✓	✓	✓
9	✓	✓	✓	✓
10	✓	✓	✓	✓
11		✓		✓
12		✓		✓
13		✓		✓
14		✓		✓

The grid above is for general guidance only and illustrates where particular objectives might receive more emphasis. Ticks are placed in the grid only where there is likely to be emphasis although the objective may also be met in other areas. There is no rigid emphasis between particular assessment objectives and individual examination components; the objectives may be assessed in any question. The components of the scheme will differ in emphasis placed on various objectives.

The short-answer questions fulfill a particularly important function in ensuring Paper 1 coverage and allowing the testing of knowledge, understanding and manipulative skills, while greater emphasis is placed on applications to the processes of problem solving in the structured/longer answer questions.

5. SCHEME OF ASSESSMENT

The purpose of assessment in Mathematics is two-fold:

- (i) it is to provide feedback to both the teacher and the learner as part of the teaching/learning process
- (ii) it is to evaluate the effectiveness of the Mathematics programme at the secondary school level.

Scheme of Assessment

All candidates must enter for two papers. These will be Paper 1 and Paper 2.

<p>Paper 1 (1 hour and 30 minutes)</p> <p>Compulsory short-answer paper consisting of 100 marks. The paper is divided into multiple choice and short answer questions.</p> <p>This paper will be weighted at 50% of the final total available marks.</p>
<p>Paper 2 (2 hours)</p> <p>Compulsory structured/longer answer paper consisting of 100 marks.</p> <p>This paper will be weighted at 50% of the final total available marks.</p>

Weighting of papers

Paper	Weighting Papers 1 and 2 only
1	50%
2	50%

6. CURRICULUM CONTENT

Learners will follow the Swaziland Primary Certificate Mathematics curriculum. The curriculum content is divided into topics covering four areas: Number & Measurement; Shape, Position & Space; Information handling and Problem solving. The table shows the approximate weighting of these areas in each of the components of the examination.

Paper	Number & Measurement	Shape, Position & Space	Information Handling	Problem Solving
1	60%	15%	10%	15%
2	50%	25%	10%	15%

As well as demonstrating skill in the following techniques, candidates will be expected to apply them in the solution of problems.

Appropriate teaching time for the Mathematics syllabus should be equivalent to seven (7) periods of forty (30) minutes each over a period of seven years.

CONTENT

OUTCOME	TOPIC	OBJECTIVES
Number & Measurement	1. Mass	<p>All learners should be able to:</p> <p>1.1.1 measure mass and solve problems related to mass.</p> <p>1.1.2 use arbitrary units</p> <p>1.1.3 use class standard units</p> <p>1.1.4 use kilograms, grams, tonnes</p> <p>1.1.5 convert from one unit to the other</p>
	2. Area	<p>2.1.1 find area and solve problems related to area</p> <p>2.1.2 use arbitrary units</p> <p>2.1.3 use class standard units</p> <p>2.1.4 use cm², m², Acres, Hectares</p> <p>2.1.5 convert from one unit to the other</p>
	3. Length	<p>3.1.1 find length and solve problems related to length</p> <p>3.1.2 use arbitrary units</p> <p>3.1.3 use class standard units</p> <p>3.1.4 use cm, m, mm, km</p> <p>3.1.5 convert from one to the other</p> <p>3.1.6 identify perimeter, circumference as length</p> <p>3.1.7 use a ruler, tape measure, trundle wheels to measure length</p>
	4. Capacity	<p>4.1.1 find capacity or volume and solve problems related to capacity</p> <p>4.1.2 use arbitrary units</p> <p>4.1.3 use class standard units</p> <p>4.1.4 use ml, litres, cm³</p> <p>4.1.5 interconvert units between litres and ml</p> <p>4.1.6 solve problems involving capacity</p>

SPC MATHEMATICS Syllabus 212
November 2017 – 2019 Examinations

	5. Time	<p>5.1.1 tell time and measure time periods and solve related problems</p> <p>5.1.2 use 12- and 24-hour time</p> <p>5.1.3 use seconds, minutes, hours, days, weeks, months, years, decades, century</p> <p>5.1.4 use calendar, timetables, timelines</p> <p>5.1.5 interconvert between 12- and 24-hour time</p>
	6. Money	<p>6.1.1 use local currency to solve problems related to money</p> <p>6.1.2 identify and use coins and notes</p> <p>6.1.3 comparative shopping</p> <p>6.1.4 find simple interest for a period of one year</p> <p>6.1.5 find profit and loss</p> <p>6.1.6 use the terms: income, expenditure, simple interest, budget, cost</p> <p>6.1.7 solve problems related to money</p> <p>6.1.8 workout postal transactions (e.g. buying stamps, registered letters, sending parcels, sending telegrams)</p>
Measurement & Number cont.	7. Number	<p>7.1.1 identify and use numbers as fractions and whole numbers up to 7-digit number</p> <p>7.1.2 write numbers in numerals including expanded form and in words</p> <p>7.1.3 identify place value</p> <p>7.1.4 classify numbers as: prime, odd, even, factors and multiple of,</p> <p>7.1.5 find LCM, HCF</p> <p>7.1.6 round of numbers up to the nearest ten thousand</p> <p>7.1.7 use set diagrams and number line</p> <p>7.1.8 use common and decimal fractions</p> <p>7.1.9 convert common fraction to decimal fractions and vice versa</p> <p>7.1.10 generate and use equivalent fractions</p> <p>7.1.11 calculate and use percentages</p> <p>7.1.12 use the symbols $<$, $>$ or $=$ to compare numbers</p> <p>7.1.13 arrow and mapping diagrams to show number relations</p>
	8. Operations	<p>8.1.1 perform the four basic operations</p> <p>8.1.2 add numbers of up to 6-digits</p> <p>8.1.3 subtract numbers of up to 7-digit with or without re-grouping</p> <p>8.1.4 multiply numbers with up to 5-digits by an up to 3-digit number</p> <p>8.1.5 divide an up to 5-digit number by an up to 2-digit number with or without remainder</p> <p>8.1.6 add and subtract common fractions and mixed numbers with same and different denominators.</p> <p>8.1.7 multiply common fractions by whole number and by another common fraction.</p> <p>8.1.9 add and subtract decimal fractions up to 3-decimal places</p> <p>8.1.10 multiply decimal fraction by powers of 10 and whole numbers</p> <p>8.1.11 divide a whole number by a unit fraction</p> <p>8.1.12 divide decimal fractions by powers of 10</p> <p>8.1.13 use commutative, associative and distributive properties for addition and multiplication</p> <p>8.1.14 simple proportion problems</p>

SPC MATHEMATICS Syllabus 212
November 2017 – 2019 Examinations

Shape Position & Space	9. Shapes	<p>9.1.1 identify and manipulate flat and solid shapes</p> <p>9.1.3 classify solids shapes as prisms, pyramids, cuboids</p> <p>9.1.4 nets of prisms, pyramids and cuboids</p> <p>9.1.5 name polygons up to 8 sides</p> <p>9.1.6 name and classify triangles and quadrilaterals</p> <p>9.1.7 name show relationship between parts of a circle</p> <p>9.1.8 construct triangles and quadrilaterals using geometrical instruments</p> <p>9.1.9 tessellate with one polygon</p> <p>9.1.10 sum of interior angles of triangles and quadrilaterals</p> <p>9.1.11 line segments; intersecting; horizontal; vertical, parallel and perpendicular</p> <p>9.1.12 bisect line using geometrical instruments</p> <p>9.1.13 right, acute, obtuse, straight, reflex angles</p> <p>9.1.14 construct a 60° angle using geometrical instruments</p> <p>9.1.15 bisect angle of any given size using geometrical instruments</p>
	10. Position (Coordinate diagrams)	<p>10.1.1 use coordinates to position figures</p> <p>10.1.2 plot and read points on coordinate diagram on the first quadrant only</p>
	11. Space (Movements)	<p>11.1.1 move figures on a grid using:</p> <p>11.1.2 sliding (expressed as movement to the right or left followed by movement up or down),</p> <p>11.1.2 reflection (one way, mirror line not attached to an object),</p> <p>11.1.3 rotation (rotation through $\frac{1}{4}$, $\frac{1}{2}$ and full turn)</p> <p>11.1.4 enlargement (whole number scale factor with no centre recognized; similar figures)</p> <p>11.1.5 combined movements (two only)</p> <p>11.1.6 tessellate with one polygon</p>
Information Handling	12. Graphs	<p>12.1.1 interpret and represent information using:</p> <p>12.1.2 bar graphs (one to many correspondence)</p> <p>12.1.3 number line (from 0 upwards)</p> <p>12.1.4 pictograms (one to many)</p> <p>12.1.5 pie chart (using angles, fractions, percentage)</p> <p>12.1.6 information tables</p> <p>12.1.7 averages (mode and median)</p>
Problem solving	<p>13 a) Strategies</p> <ul style="list-style-type: none"> ▪ model ▪ non-routine <p>b) Reasoning</p> <ul style="list-style-type: none"> ▪ visual thinking ▪ critical thinking ▪ decision making 	<p>13.1.1 solve problems using problem solving strategies and employing appropriate reasoning skills</p> <p>13.1.2 Problem solving model</p> <ul style="list-style-type: none"> ▪ understanding ▪ interpreting ▪ deciding on a method ▪ computing ▪ reflecting ▪ extension <p>13.1.3 Non-routine</p> <ul style="list-style-type: none"> ▪ trial and check ▪ working backwards ▪ finding a pattern ▪ logical reasoning ▪ elimination <p>13.1.4 Reasoning skills</p> <ul style="list-style-type: none"> ▪ visual thinking ▪ critical thinking ▪ decision making

GRADE DESCRIPTIONS

The scheme of assessment is intended to encourage positive achievement by all candidates. Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The grade awarded will depend on the extent to which the candidate has met the assessment objectives overall.

Criteria for the standard of achievement likely to have been shown by candidates awarded Grades A, C and E is shown below.

Grade A

- 1 Interconvert between the metric units of mass, length, area and capacity
- 2 Interconvert between 12- and 24-hour clock
- 3 Apply the principle of comparative shopping
- 4 Workout transactions (e.g. buying stamps, registered letters, sending parcels, sending telegrams)
- 5 Find the LCM and HCF
- 6 Convert common fractions to decimal fractions and vice versa
- 7 Calculate, use and convert percentages
- 8 multiply numbers with up to 5-digits by an up to 3-digit number
- 9 divide an up to 5-digit number by an up to 2-digit number with / without remainder
- 10 Add and subtract common fractions and mixed numbers with same and different denominators.
- 11 Divide a whole number by a unit fraction
- 12 Use commutative, associative and distributive properties for addition and multiplication
- 13 Solve simple proportion problems
- 14 Draw nets of prisms, pyramids and cuboids
- 15 Construct triangles and quadrilaterals using geometrical instruments
- 16 Tessellate with one polygon
- 17 Use the property of the sum of interior angles and quadrilaterals
- 18 Bisect lines using geometrical instruments
- 19 Construct a 60° angle using geometrical instruments
- 20 Bisect angle of any given size using geometrical instruments
- 21 Sliding (expressed as movement to the right or left followed by movement up or down),
- 22 Reflection (one way, mirror line not attached to an object),
- 23 Rotation (rotation through $\frac{1}{4}$, $\frac{1}{2}$ and full turn)
- 24 Enlargement (whole number scale factor with no centre recognized; similar figures)
- 25 Combined movements (two only)
- 26 Bar graphs (one to many correspondence)
- 27 Pie chart (using angles, fractions, percentage)
- 28 Information tables
- 29 Solve problems using problem solving strategies and employing appropriate reasoning skills:
 - (a) Problem solving model
 - (i) understanding
 - (ii) interpreting
 - (iii) deciding on a method
 - (iv) computing
 - (v) reflecting
 - (vi) extension
 - (b) Non-routine
 - (i) trial and check
 - (ii) working backwards
 - (iii) finding a pattern
 - (iv) logical reasoning
 - (iv) elimination
 - (c) Reasoning skills
 - (i) visual thinking
 - (ii) critical thinking
 - (iii) decision making

Grade C

- 1 Use metric units to measure mass, area and capacity
- 2 Use 12- and 24-hour clock
- 3 Identify perimeter and circumference as length
- 4 Solve problems involving Mass, Area and Capacity
- 5 Use seconds, minutes, hours, decades and century
- 6 Use calendar, timetables, timelines
- 7 Find simple interest for a period of one year
- 8 Find profit and loss
- 9 Solve problems on income, expenditure, simple interest, budget, cost
- 10 Write numbers in words and expanded form
- 11 Classify numbers as prime, odd, even, factors and multiple
- 12 Round off number up to the nearest ten thousand
- 13 Use set diagrams and number line
- 14 Use common and decimal fractions
- 15 Draw arrow and mapping diagrams to show number relations
- 16 Subtract numbers of up to 7-digit with or without re-grouping
- 17 Multiply common fractions by whole number and by another common fraction
- 18 Add and subtract decimal fractions up to 3-decimal places
- 19 Multiply decimal fraction by powers of 10 and whole numbers
- 20 Divide decimals by the powers of 10
- 21 Name and show relationships between parts of a circle
- 22 Identify line segments; intersecting; horizontal; vertical, parallel and perpendicular
- 23 Name measure and draw right, acute, obtuse, straight, reflex angles
- 24 Plot and read points on coordinate diagram on the first quadrant only
- 25 Number line (from 0 upwards)
- 26 Interpreting and representing information using pictograms (one to many)
- 27 workout averages (mode and median)

Grade E

- 1 Use arbitrary and class standard units to measure Mass area Length and Capacity
- 2 Use a ruler, tape measure, trundle wheels to measure length
- 3 Use days, weeks, months and years
- 4 Identify and use coins and notes
- 5 Write numbers in numerals
- 6 Identify place value
- 7 Use the symbols $<$, $>$, $=$ to compare numbers
- 8 add numbers of up to 6-digits
- 9 Identify solid shapes
- 10 Classify solid shapes as prisms, pyramids, cuboids
- 11 Identify flat shapes
- 12 Name polygons up to 8 sides
- 13 Name and classify triangles and quadrilaterals

Copyright

The content of this syllabus is owned by the Examinations Council of Swaziland.

Re-publication, alteration, transmission, resale or redistribution in any form or by any means is expressly prohibited without prior written consent of ECOS.

Examinations Council of Swaziland
P.O Box 1394
Mbabane
Tel: 2416 2865/9
Fax: 2416 2862
www.examsCouncil.org.sz