



cetb

Bord Oideachais agus
Oiliúna Chorcaí

*Cork Education and
Training Board*

Cork Education and Training Board

Programme Module for

Mathematics

leading to

Level 4 FETAC

Mathematics 4N1987

Introduction

This programme module may be delivered as a standalone module leading to certification in a FETAC minor award. It may also be delivered as part of an overall validated programme leading to a Level 4 FETAC Certificate.

The teacher/tutor should familiarise themselves with the information contained in Cork Education and Training Board's programme descriptor for the relevant validated programme prior to delivering this programme module.

The programme module is structured as follows:

1. Title of Programme Module
2. FETAC Component Title and Code
3. Duration in hours
4. Credit Value of FETAC Component
5. Status
6. Special Requirements
7. Aim of the Programme Module
8. Objectives of the Programme Module
9. Learning Outcomes
10. Indicative Content
11. Assessment <ul style="list-style-type: none">a. Assessment Technique(s)b. Mapping of Learning Outcomes to Assessment Technique(s)c. Guidelines for Assessment Activities
12. Grading
13. Learner Marking Sheet(s), including Assessment Criteria

Integrated Delivery and Assessment

The teacher/tutor is encouraged to integrate the delivery of content where an overlap between content of this programme module and one or more other programme modules is identified. This programme module will facilitate the learner to develop language, literacy and numeracy skills relevant to the themes and content of the module.

Likewise the teacher/tutor is encouraged to integrate assessment where there is an opportunity to facilitate a learner to produce one piece of assessment evidence which demonstrates the learning outcomes from more than one programme module. The integration of the delivery and assessment of level 4 Communications and level 4 Mathematics modules with that of other level 4 modules is specifically encouraged.

Structured communication and teamwork is encouraged between the teacher/tutor delivering this programme module and the language, literacy, numeracy and learning support teacher/tutor, as appropriate, to facilitate the learner in completing the programme module and achieving certification in the award.

Indicative Content

The indicative content in Section 10 does not cover all teaching possibilities. The teacher/tutor is encouraged to be creative in devising and implementing other approaches, as appropriate. The use of examples is there to provide suggestions. The teacher/tutor is free to use other examples, as appropriate. The indicative content ensures all learning outcomes are addressed but it may not follow the same sequence as that in which the learning outcomes are listed in Section 9. It is the teacher's/tutor's responsibility to ensure that all learning outcomes are included in the delivery of this programme module.

Cork Education and Training Board

<p>1. Title of Programme Module Mathematics</p>
<p>2. Component Name and Code Mathematics 4N1987</p>
<p>3. Duration in Hours 100hrs (typical learner effort, to include both directed and self directed learning)</p>
<p>4. Credit Value 10</p>
<p>5. Status This programme module may be compulsory or optional within the context of the validated programme. Please refer to the relevant programme descriptor, Section 9 Programme Structure</p>
<p>6. Special Requirements The provider must have all of the following in place to offer this award: 1. Each candidate will be supplied with a set of Formulae and Tables at examination 2. Calculators are available to each candidate at examination</p>
<p>7. Aim of the Programme Module This programme module aims to provide the learner with the relevant skills, understanding and abilities to deal competently with mathematical theory and applications in a variety of contexts focusing on everyday life and with limited conceptual understanding.</p>
<p>8. Objectives of the Programme Module</p> <ul style="list-style-type: none"> • To provide the learner with the confidence to understand, discuss and apply mathematical operations and terminology as related to the four units. • To facilitate the learner to apply mathematical formulae to given situations, develop and solve equations and understand how they apply to the world around them. • To enable the learner use a variety of mathematical tools and instruments in a competent manner. • To provide the learner with the ability to translate information into mathematical representations, equations or graphical modes. • To assist the learner to develop the language, literacy and numeracy skills related to mathematics through the medium of the module themes and content • To enable the learner to take responsibility for his/her own learning.

9. Learning Outcomes of Level 4 Mathematics 4N1987

Learners will be able to:

1 NUMBER

- 1.1 Discuss the application of number to familiar real life situations
- 1.2 Calculate conversions to include between currencies, between fractions, decimals and percentages, and from fractions to ratios and ratios to fractions, and from standard form to scientific notation and scientific notation to standard form
- 1.3 Use appropriate strategies such as rounding off, places of decimal, significant figures, estimation, percentage error, to give approximations, where numbers are from the set of natural numbers (N) and from the set of integers (Z)
- 1.4 Use a calculator with confidence to perform extended calculations, requiring functions such as addition, subtraction, multiplication, division, percent, square root, pi, $1/x$, scientific notation keys, memory keys and the clear key, while following the conventions of precedence of operations
- 1.5 Demonstrate an understanding of the laws of indices and the rules of logarithms by using the laws and rules to simplify expressions, solve equations, and transpose formulae
- 1.6 Differentiate between simple interest and compound interest by applying the appropriate given formula to a range of savings and credit options
- 1.7 Apply the percentage function accurately to a range of everyday situations including gross income and net income, pay slips using appropriate statutory deductions, gross profit, net profit and loss on goods sold, VAT inclusive and VAT exclusive prices.

2 GEOMETRY

- 2.1 Describe simple geometric shapes associated with the home and workplace
- 2.2 Recognise folding symmetry and rotational symmetry in common shapes
- 2.3 Plot graphs of ordered pairs in the coordinate plane showing the relationship between two variables, using real life situations and the correct terminology
- 2.4 Use formulae for calculations in the coordinate plane correctly, including distance between two points, mid-point of a line segment, slope of a line, parallel lines, perpendicular lines, equation of a line, equation of a circle with centre (0,0) and radius r , and tangent to a circle
- 2.5 Construct, using drawing instruments, a variety of angles and simple geometric shapes to given criteria to include naming of angle types and sides associated with the shapes and angles
- 2.6 Solve practical problems by using the correct formula (e) to calculate the area and perimeter of a square, rectangle, triangle, and circle, giving the answer in the correct form and using the correct terminology
- 2.7 Solve practical problems by using the correct formula (e), to calculate the volume/capacity and surface area of a cube, cuboid, cylinder, cone, and sphere, giving the answer in the correct form and using the correct terminology
- 2.8 Apply standard axioms and theorems of geometry, including Pythagoras Theorem, to solve real life or simulated problems involving straight lines, parallel lines, angles, and triangles.

3 ALGEBRA

- 3.1 Discuss the presence of variables in a range of real life situations
- 3.2 Solve algebraic equations including linear equations of one variable, simultaneous linear equations of two unknowns, and linear inequalities of one variable
- 3.3 Solve quadratic equations using factors and the quadratic formula
- 3.4 Construct algebraic expressions and formulae for real life situations using the correct terminology and including rearrangement of formulae.

4 DATA HANDLING

- 4.1** Explain basic statistical concepts to include population, sample, dependent, independent and discrete variables
- 4.2** Present information from data collected from the World Wide Web or other methods, in graphical and tabular form, including bar charts, pie charts, trend graphs, cumulative frequency curves, histograms and frequency tables
- 4.3** Calculate the statistics for measuring averages and dispersion of an array of data, to include calculating the mean, mode, and median
- 4.4** Discuss findings, to include interpretation of results, and suggesting reasons for findings.

10. Indicative Content

This section provides suggestions for programme content but is not intended to be prescriptive. The programme module can be delivered through classroom based learning activities, group discussions, one-to-one tutorials, field trips, case studies, role play and other suitable activities, as appropriate.

Section 1 : Number

Facilitate discussions, applications and calculations of numbers including:

- **Facilitate the learner to discuss the application of number to familiar real life situations**

For Example:

- Allow learners to investigate possible opportunities where the application of number could improve learner's problem solving skills and effectiveness in personal, social and workplace settings e.g. shopping, wages, tax, budgeting, betting etc.
- **Enable the learner to calculate conversions to include between currencies, between fractions, decimals and percentages, and from fractions to ratios and ratios to fractions, and from standard form to scientific notation and scientific notation to standard form**

For Example:

- Allow the learner to be familiar with the various types of mathematical conversions and their usefulness in various situations
- Fractions to ratios – e.g. baking, cooking, mixing paint, cement
- Scientific notation – e.g. discuss their use in science, engineering etc., when dealing with extremely large & small numbers
- **Facilitate the learner to use appropriate strategies such as rounding off, places of decimal, significant figures, estimation, percentage error, to give approximations, where numbers are from the set of natural numbers (N) and from the set of integers (Z)**

For Example:

- Enable the learner to identify the usefulness of approximations in real life situations
- Facilitate the learner to discuss the advantages and disadvantages of rounding off & possible error involved
- Enable the learner to make and justify estimates & approximations of calculations, calculate percentage errors and tolerance
- Facilitate the learner to discuss the difference between natural numbers and integers
- **Provide the learner with the ability to use a calculator with confidence to perform extended calculations, requiring functions such as addition, subtraction, multiplication, division, percent, square root, pi, $1/x$, scientific notation keys, memory keys and the clear key, while following the conventions of precedence of operations**

For Example:

- Facilitate the learner to be familiar with the various functions of the scientific calculator as indicated above
- Provide the learner with the knowledge of the importance of mathematical precedence when using a calculator
- Enable the learner to accurately calculate/solve a range of real life problems using these functions on the calculator

<ul style="list-style-type: none">○ Allow the learner to demonstrate an understanding of the laws of indices and the rules of logarithms by using the laws and rules to simplify expressions, solve equations, and transpose formulae <p>For Example:</p> <ul style="list-style-type: none">○ Facilitate the learner to examine the laws of indices and rules of logarithms as indicated in the state examination formulae tables○ Enable the learner to use these to develop an understanding of how to simplify expressions, solve equations and transpose formulae○ Facilitate the learner to differentiate between simple interest and compound interest by applying the appropriate given formula to a range of savings and credit options <p>For Example</p> <ul style="list-style-type: none">○ Allow the learner to identify the characteristics of simple and compound interest○ Enable the learner to gain an understanding of how each type of interest is calculated○ Enable the learner to use the formulae available to compare and contrast the various savings and credit options currently available○ Enable the learner to apply the percentage function accurately to a range of everyday situations including gross income and net income, pay slips using appropriate statutory deductions, gross profit, net profit and loss on goods sold, VAT inclusive and VAT exclusive prices. <p>For Example</p> <ul style="list-style-type: none">○ Facilitate the learner to discuss the terms income tax, net pay, tax credits, USC, PRSI, PAYE○ Facilitate the learner to solve a range of real life situations including those listed above○ Enable the learner to solve problems that involve calculating cost price, selling price, loss, discount, mark up (profit as a % of cost price)
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Section 2: Geometry

Facilitate discussions, applications and calculations of geometric formula. Graph and construct mathematical applications and shapes

To Include:

- **Enable the learner to describe simple geometric shapes associated with the home and workplace**

For Example

- Parallelogram, triangle, rectangle, right-angled triangle, isosceles triangle, circle, cubes, cuboid, cylinder, cone, sphere
- E.g. cereal boxes, crayons, shapes of buildings etc.
- Facilitate the learner to list the characteristics of these shapes using the correct terminology such as parallel lines, perpendicular lines

- **Facilitate the learner to recognise folding symmetry and rotational symmetry in common shapes**

For Example

- Familiarise the learner with the concept of symmetry
- Enable the learner to identify the characteristics of folding and rotational symmetries
- Facilitate the learner to develop an understanding and identify folding and

rotational symmetry of common shapes e.g. parallelogram, triangle, square, rectangle, circle

- **Enable the learner to plot graphs of ordered pairs in the coordinate plane showing the relationship between two variables, using real life situations and the correct terminology**

For Example:

- Familiarize the learner with the concept of ordered pairs/paired data/bivariate data/(x,y)
- Enable the learner to draw up a range of tables, using real life situations, that demonstrate relations between two variables
 - E.g. arm span v's Height, Years spent in Education v's income
- Enable the learner to demonstrate information in graphical format by plotting a graph showing the relationship between ordered pairs using an appropriate scale, labelled axis, well spread out data etc.

- **Facilitate the learner to use formulae for calculations in the coordinate plane correctly, including distance between two points, mid-point of a line segment, slope of a line, parallel lines, perpendicular lines, equation of a line, equation of a circle with centre (0,0) and radius r , and tangent to a circle**

- Introduce the learner to the terminology and formulae associated with co-ordinate geometry as indicated above and given in the state examination formulae tables
- Using appropriate formula enable the learner to calculate slope(rise/run)
- Enable the learner to identify whether a slope is positive, negative or zero visually
- Facilitate the learner to use slopes to show whether two lines are parallel or perpendicular
- Enable the learner to use these formulae to solve a range of co-ordinate geometry problems

- **Facilitate the learner to construct, using drawing instruments, a variety of angles and simple geometric shapes to given criteria to include naming of angle types and sides associated with the shapes and angles**

For Example:

- Enable the learner to identify and use instruments such as a compass, protractor, straight edge, ruler, set square.
- Facilitate the learner to identify, differentiate between and construct the following types of angles commonly encountered in the home and workplace; right, obtuse, acute and reflex
- Support the learner to use the appropriate drawing tools to construct a variety of shapes and angles e.g.
 - A triangle given the lengths of 3 sides (SSS)
 - A triangle given the lengths of 2 sides and the angle between them (SAS)
 - A triangle given the size of 2 angles and the length of the side between them (ASA)
 - Right angled triangle given the length of the hypotenuse and one other side
 - A rectangle given side lengths
 - A circle of known radius
 - A parallelogram given the length of sides and measure of angles

- **Enable the learner to solve practical problems by using the correct formula(e) to calculate the area and perimeter of a square, rectangle, triangle, and circle, giving the answer in the correct form and using the correct terminology**

For Example:

- Introduce the learner to these formulae given in the state examination formulae tables and allow the learner to identify the correct formula to apply
- Enable the learner to use these formulae & combination of these formulae to solve practical problems e.g.
 - Amount of tiles needed to cover a floor
 - Size of a picture frame needed
 - Amount of fertilizer needed for a lawn of a certain shape
- **Facilitate the learner to solve practical problems by using the correct formula(e), to calculate the volume/capacity and surface area of a cube, cuboid, cylinder, cone, and sphere, giving the answer in the correct form and using the correct terminology**

For Example:

- Introduce the learner to these formulae given in the state examination formulae tables and allow the learner to identify the correct formula to apply
- Enable the learner to use these formulae & combination of these formulae to solve practical problems e.g.
 - How many of a given shape can fit in a box for postage
- **Facilitate the learner to apply standard axioms and theorems of geometry, including Pythagoras Theorem, to solve real life or simulated problems involving straight lines, parallel lines, angles, and triangles.**

For Example

- Enable the learner to state the theorem of Pythagoras in words and symbols
- Enable the learner to use the theorem of Pythagoras to solve a range of practical problems
- Facilitate the learner to discuss the difference between axioms and theorems
- Enable the learner to use the following axioms and theorems to solve a variety of problems
 - Ruler axiom
 - Protractor axiom
 - Axiom of parallels
 - Vertically opposite angles
 - Alternate & corresponding angles
 - Angles in a triangle add to 180°
 - In a parallelogram opposite sides are equal and opposite angles are equal

Section 3: Algebra

Facilitate the learner to understand and apply algebraic concepts and realise the relationship between algebra and the world around them, including:

- **Enable the learner to discuss the presence of variables in a range of real life situations**

For Example:

- Familiarise the learner with the concept of variables in maths and enable them to identify where they encounter variables e.g. how many of a certain item can you afford to buy

- **Solve algebraic equations including linear equations of one variable, simultaneous linear equations of two unknowns, and linear inequalities of one variable**

For Example:

- Familiarise the learner with the concept of one variable linear equations and

<p>the steps necessary to solve them.</p> <ul style="list-style-type: none">○ Enable the learner to solve various one variable linear equations to include functions of addition, subtraction, multiplication, and division.○ Familiarise the learner with the concept of simultaneous equations of two unknowns and the steps necessary to solve them (by elimination, by substitution).○ Facilitate the learner to solve various simultaneous linear equations of two unknowns using both methods.○ Familiarise the learner with the concept of linear inequalities of one variable and the steps necessary to solve them.○ Enable the learner to solve various linear inequalities of one variable. <ul style="list-style-type: none">● Facilitate the learner to solve quadratic equations using factors and the quadratic formula For Example:<ul style="list-style-type: none">○ Familiarise the learner with the concept of quadratic equations.○ Facilitate the student to understand that x^2 in the quadratic equation indicates that a graph cuts the x axis in two places○ Enable the learner to solve quadratic equations using factorisation and the quadratic formula● Enable the learner to construct algebraic expressions and formulae for real life situations using the correct terminology and including rearrangement of formulae. For Example:<ul style="list-style-type: none">○ Enable the learner to see how real life situations can be expressed as algebraic expressions.○ Facilitate the learner to translate real life situations into word problems and then translate those word problems into algebraic expressions and equations
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Section 4: Data Handling

Facilitate the learner to become a statistically aware individual and allow them to use data to calculate and graph basic statistics.

- **Enable the learner to understand basic statistical concepts to include population, sample, dependent, independent and discrete variables**
For Example:
 - Facilitate a discussion about the purpose of statistics and recognise misconceptions and misuses of statistics
 - Facilitate a discussion the idea of samples (sample size, simple random sample) in relation to population
 - Enable the learner to recognise the difference between dependant and independent variables
 - Enable the learner to recognise the difference between discrete, continuous and categorical data
- **Facilitate the learner to be able to present information from data collected from the world wide web or other methods, in graphical and tabular form, including bar charts, pie charts, trend graphs, cumulative frequency curves, histograms and frequency tables**
For Example
 - Support a discussion about the different ways that information can be presented – (graphically, in tables) and the uses of representing data

graphically.

- Facilitate the learner to collect statistical information on a particular subject, either using the World Wide Web (e.g. www.cso.ie/statistics) or other methods (collect raw data e.g. average height in class etc.)
 - Enable the learner presented the collected data in table form.
 - Familiarise the learner with some of the common types of graphs, their methods of construction and when they are most appropriately used (e.g. discrete, continuous or categorical data) – bar charts, pie charts, trend graphs, cumulative frequency curves and histograms.
 - Enable the learner to construct examples of the different type of graphs using the information they collected.
 - Facilitate the learner to evaluate the effectiveness of different graphical displays
- **Enable the learner to calculate the statistics for measuring averages and dispersion of an array of data, to include calculating the mean, mode, and median**
For Example
 - Facilitate the learner to calculate the spread/range /standard deviation of an array of data.
 - **Facilitate the learner to discuss findings, to include interpretation of results, and suggesting reasons for findings.**
 - Facilitate learners to discuss the advantages and disadvantages of the different averages and when it would be appropriate to use each.

11. Assessment**11a. Assessment Techniques**

Portfolio / Collection of Work 80%

Examination - Theory 20%

11b. Mapping of Learning Outcomes to Assessment Techniques

In order to ensure that the learner is facilitated to demonstrate the achievement of all learning outcomes from the component specification; each learning outcome is mapped to an assessment technique(s). This mapping should not restrict an assessor from taking an integrated approach to assessment.

Learning Outcome	Assessment Technique
1 NUMBER	
1.1 Discuss the application of number to familiar real life situations	Portfolio / Collection of Work
1.2 Calculate conversions to include between currencies, between fractions, decimals and percentages, and from fractions to ratios and ratios to fractions, and from standard form to scientific notation and scientific notation to standard form	Examination - Theory
1.3 Use appropriate strategies such as rounding off, places of decimal, significant figures, estimation, percentage error, to give approximations, where numbers are from the set of natural numbers (N) and from the set of integers (Z)	Portfolio / Collection of Work
1.4 Use a calculator with confidence to perform extended calculations, requiring functions such as addition, subtraction, multiplication, division, percent, square root, pi, 1/x, scientific notation keys, memory keys and the clear key, while following the conventions of precedence of operations	Portfolio / Collection of Work
1.5 Demonstrate an understanding of the laws of indices and the rules of logarithms by using the laws and rules to simplify expressions, solve equations, and transpose formulae	Portfolio / Collection of Work
1.6 Differentiate between simple interest and compound interest by applying the appropriate given formula to a range of savings and credit options	Portfolio / Collection of Work
1.7 Apply the percentage function accurately to a range of everyday situations including gross income and net income, pay slips using appropriate statutory deductions, gross profit, net profit and loss on goods sold, VAT inclusive and VAT exclusive prices.	Examination - Theory
2 GEOMETRY	
2.1 Describe simple geometric shapes associated with the home and workplace	Portfolio / Collection of Work
2.2 Recognise folding symmetry and rotational symmetry in common shapes	Portfolio / Collection of Work
2.3 Plot graphs of ordered pairs in the coordinate plane showing the relationship between two variables, using real life situations and the correct terminology	Portfolio / Collection of Work
2.4 Use formulae for calculations in the coordinate plane correctly, including distance between two points, mid-point of a line segment, slope of a line, parallel lines, perpendicular lines, equation of a line, equation of a circle with centre (0,0) and radius r, and tangent to a circle	Portfolio / Collection of Work
2.5 Construct, using drawing instruments, a variety of angles and simple geometric shapes to given criteria to include naming of angle types and sides associated with the shapes and angles	Portfolio / Collection of Work
2.6 Solve practical problems by using the correct formula(e) to calculate the area and perimeter of a square, rectangle, triangle, and circle, giving the answer in the correct form and using the correct terminology	Examination - Theory

2.7 Solve practical problems by using the correct formula(e), to calculate the volume/capacity and surface area of a cube, cuboid, cylinder, cone, and sphere, giving the answer in the correct form and using the correct terminology	Examination - Theory
2.8 Apply standard axioms and theorems of geometry, including Pythagoras Theorem, to solve real life or simulated problems involving straight lines, parallel lines, angles, and triangles.	Portfolio / Collection of Work
3 ALGEBRA	
3.1 Discuss the presence of variables in a range of real life situations	Portfolio / Collection of Work
3.2 Solve algebraic equations including linear equations of one variable, simultaneous linear equations of two unknowns, and linear inequalities of one variable	Portfolio / Collection of Work Examination - Theory
3.3 Solve quadratic equations using factors and the quadratic formula	Portfolio / Collection of Work
3.4 Construct algebraic expressions and formulae for real life situations using the correct terminology and including rearrangement of formulae.	Portfolio / Collection of Work
4 DATA HANDLING	Portfolio / Collection of Work
4.1 Explain basic statistical concepts to include population, sample, dependent, independent and discrete variables	Portfolio / Collection of Work
4.2 Present information from data collected from the world wide web or other methods, in graphical and tabular form, including bar charts, pie charts, trend graphs, cumulative frequency curves, histograms and frequency tables	Portfolio / Collection of Work
4.3 Calculate the statistics for measuring averages and dispersion of an array of data, to include calculating the mean, mode, and median	Examination - Theory
4.4 Discuss findings, to include interpretation of results, and suggesting reasons for findings.	Portfolio / Collection of Work

11c. Guidelines for Assessment Activities

The assessor is required to devise assessment briefs and examination papers, marking schemes and outline solutions for the Portfolio/Collection of Work and Examination. In devising the assessment briefs and examination paper, care should be taken to ensure that the learner is given the opportunity to show evidence of achievement of ALL the learning outcomes. Assessment briefs may be designed to allow the learner to make use of a wide range of media in presenting assessment evidence, as appropriate. Quality assured procedures must be in place to ensure the reliability of learner evidence.

Portfolio/Collection of Work	80%
The collection of work may be produced over the duration of this programme module.	
<p>The learner will compile a collection of work , to include evidence that demonstrates the following:</p> <p>NUMBER:- Evidence of an understanding of the theory and practice of:</p> <ul style="list-style-type: none"> • approximation techniques • use of a scientific calculator • the laws of indices • simple and compound interest • the application of number to familiar real life situations <p><i>(As covered in the following learning outcomes 1.1, 1.3, 1.4, 1.5 and 1.6)</i></p> <p>GEOMETRY:- Evidence of an understanding of the theory and practice of:</p> <ul style="list-style-type: none"> • Everyday shapes, angles and their construction • Symmetry in common shapes • Plotting graphs in the coordinate plain using real life situations • Common coordinate geometry formulae to solve problems • Standard axioms and theorems of geometry, to include Pythagoras Theorem <p><i>(As covered in the following learning outcomes 2.1, 2.2, 2.3, 2.4, 2.5 and 2.8)</i></p> <p>ALGEBRA:- Evidence of an understanding of the theory and practice of:</p> <ul style="list-style-type: none"> • Solving algebraic equations • Solving quadratic equations • Variables in everyday life and the construction of algebraic expressions and formulae from these <p><i>(As covered in the following learning outcomes 3.1, 3.3 and 3.4)</i></p> <p>DATA HANDLING:- Evidence of an understanding of the theory and practice of:</p> <ul style="list-style-type: none"> • the purpose of statistics, • how statistics are derived, 	

- how statistics are presented and interpreted

(As covered in the following learning outcomes 4.1, 4.2 and 4.4)

Evidence for this assessment technique may take the form of written, oral, graphic, audio, visual or digital evidence, or any combination of these (select as appropriate). Any audio, video or digital evidence must be provided in a suitable format.

All instructions for the learner must be clearly outlined in an assessment brief/examination paper

Examination - Theory	20%
2.hours	
<p>The tutor will devise a theory examination that assesses the learners understanding of a comprehensive range of learning outcomes.</p> <p>The format will be as follows:-</p> <p>10 Short Answer Questions (4 marks per question) – total 40 marks. Questions must cover learning outcomes (1.2, 1.7, 2.6, 2.7, 3.2 and 4.3)</p> <p>4 structured questions (answer 4) (40 marks per question) – total 160 marks Question 1 from learning outcomes 1.2 and 1.7 Question 2 from learning outcomes 2.6 and 2.7 Question 3 from learning outcome 3.2 Question 4 from learning outcome 4.3</p> <p>Total possible marks awarded 200. Weighted total = $200/10 = 20\%$</p> <p>Evidence for this assessment technique will take the form of written evidence.</p> <p>All instructions for the learner must be clearly outlined in an examination paper.</p> <p>Learners may use calculators as approved by the centre.</p>	

12. Grading

Distinction:	80% - 100%
Merit:	65% - 79%
Pass:	50% - 64%
Unsuccessful:	0% - 49%

At levels 4, 5 and 6 major and minor awards will be graded. The grade achieved for the major award will be determined by the grades achieved in the minor awards.

Mathematics 4N1987	Learner Marking Sheet Collection of Work 80%
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Learner's Name: _____

Learner's PPSN: _____

Assessment Criteria	Maximum Mark	Learner Mark
NUMBER:- <ul style="list-style-type: none"> • approximation techniques • use of a scientific calculator • the laws of indices • simple and compound interest • the application of number to familiar real life situations 	20	
GEOMETRY:- <ul style="list-style-type: none"> • Everyday shapes, angles and their construction • Symmetry in common shapes • Plotting graphs in the coordinate plain using real life situations • Common coordinate geometry formulae to solve problems • Standard axioms and theorems of geometry, to include Pythagoras Theorem 	20	
ALGEBRA:- <ul style="list-style-type: none"> • Solving algebraic equations • Solving quadratic equations • Variables in everyday life and the construction of algebraic expressions and formulae from these 	20	
DATA HANDLING:- <ul style="list-style-type: none"> • the purpose of statistics, • how statistics are derived, • how statistics are presented and interpreted 	20	
Total Mark	80	

This is to state that the evidence presented in the attached portfolio is complete and is the work of the named learner.

Assessor's Signature: _____

Date: _____

External Authenticator's Signature: _____

Date: _____

Mathematics 4N1987	Learner Marking Sheet Examination 20%
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Learner's Name: _____

Learner's PPSN: _____

Assessment Criteria	Maximum Mark	Learner Mark
Section A: Short Answer Questions 10 short answer questions (4 marks each) (Indicate questions answered) Question 1 Question 2 Question 3 Question 4 Question 5 Question 6 Question 7 Question 8 Question 9 Question 10	4 4 4 4 4 4 4 4 4 4	
Subtotal	40	
Section B: Structured Questions 4 structured questions, answer 4 (40 marks each) (Indicate questions answered) Question No.:* _____ _____ _____ _____	40 40 40 40	
Subtotal	160	
Total Mark	200	
Weighted Total: = Total divided by 10		

This is to state that the evidence presented in the attached portfolio is complete and is the work of the named learner.

Assessor's Signature: _____

Date: _____

External Authenticator's Signature: _____

Date: _____