

ST. MAARTEN ACADEMY



MATHEMATICS DEPARTMENT

FORM 3

**SYLLABUS FOR
2019 - 2020**

Caring, Learning, Achieving, Excelling

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FORM THREE

GENERAL OBJECTIVES

1. To provide an understanding of squares, square roots, Pythagoras' Theorem, Circle and simultaneous equations.
2. To provide opportunities in determining the most appropriate use of statistical concepts.
3. To provide awareness that certain algebraic concepts can be represented by graphs and such graphs can be interpreted.
4. To provide the framework for deeper understanding of certain mathematical concepts.
5. To develop systematic approaches to calculate area and perimeter of rectilinear figures.
6. To extend the application of consumer mathematics to solve more complex relevant problems.
7. To develop the ability to choose the best of a set of possible methods of solving certain mathematical problems.
8. To appreciate the need for and the importance of accuracy in computations.
9. To develop the skills of critical thinking and analysis.

TOPICS:**FORM THREE***TERM ONE*

NOTE: (i) Indices & Standard Form from 2nd form (pgs. 18 & 19) will have to be done with the first topic listed below.

(ii) Approximation & Significant Figures from 2nd form (pg. 18) is incorporated with objectives under Pythagoras' Theorem.

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|--------------------------|---------|
| 1. Fraction Indices | 2 weeks |
| 2. Pythagoras' Theorem | 2 weeks |
| 3. The circle | 3 weeks |
| 4. Algebra | 3 weeks |
| 5. Straight Line Graphs | 1 week |
| 6. Graphs of Inequations | 2 weeks |

TERM TWO

- | | |
|---|---------|
| 1. Simultaneous Equations | 2 weeks |
| 2. Consumer Arithmetic | 4 weeks |
| 4. Interior Angles of a Polygon | 1 week |
| 5. Binomial Expansion, Factorisation (part 1) | 3 weeks |

TERM THREE

- | | |
|---|---------|
| 1. Factorisation (part 2: continuation from term 2) | 1 week |
| 2. Co-ordinate Geometry | 3 weeks |
| 3. Revision | |

NB: For various reasons, often the last topic (or topics) from term one is/are carried over into term two; the same goes for term two to term three.

WK	TOPIC	OBJECTIVES	ASSESSMENT
1	FRACTIONAL INDICES Fractional indices Negative indices	<ul style="list-style-type: none"> NOTE: Wks. 5 & 6, pgs 18 &19 will have to be doe first (was not done in form2) Use: $a^{-n} = \frac{1}{a^n}$, $a^{\frac{1}{2}} = \sqrt{a}$ Express a term with a negative index in the form with a positive index. Interpret and use fractional indices 	Class work Homework Quiz
2	Expressions with indices Equations with indices	<ul style="list-style-type: none"> Apply the laws of indices above to simplify algebraic and numerical expressions. Solve algebraic equations using indices. 	Class work Homework Quiz, Test
3	PYTHAGORAS' THEOREM Squares Square roots Right angled triangle Pythagoras' theorem	<ul style="list-style-type: none"> NOTE: Wk. 2, pg. 18 will have to be done first (was not done in form 2) Define hypotenuse of a right angled triangle Identify the hypotenuse in a given right-angled triangle. State Pythagoras' Theorem 	Class work Homework Quiz Test
4	Applying Pythagoras' theorem	<ul style="list-style-type: none"> State the converse of Pythagoras' Theorem. Apply Pythagoras' Theorem to calculate the third side of a right angled triangle given the other sides. Apply the converse of Pythagoras' Theorem to determine whether or not a triangle is right angled. Apply Pythagoras' Theorem to solve simple problems in two dimensions. 	Class work Homework Quiz Test
5	THE CIRCLE Parts Circumference Arc	<ul style="list-style-type: none"> Name parts of the circle. Define the parts of a circle. Calculate the circumference and arc of a circle 	Class work Homework Quiz

6	THE CIRCLE Area Sector Segment	<ul style="list-style-type: none"> Calculate the area, sector and segment of a circle. Calculate the radius of a circle given area or circumference. 	Class work Homework Quiz
7	Circumference, Arc, Area Sector, Segment	<ul style="list-style-type: none"> Solve word problem on the area and circumference of the circle. Solve problems involving area and circumference of a circle. Discriminate between use of area and circumference when neither is specified 	Class work Homework Quiz Test
8	ALGEBRA Simplify expression Solve equations	<ul style="list-style-type: none"> Review simplifying algebraic expressions with fractions, with emphasis on subtraction. eg., $\frac{2a + 1}{6} \pm \frac{3b}{4}, \frac{7}{4a} \pm \frac{2}{3b}, \frac{3n - 1}{7} \pm \frac{2n - 1}{6}$ etc. Solve linear equations in one unknown, involving variables on both sides and including brackets. 	Class work Homework Quiz
9	Solve equations	<ul style="list-style-type: none"> Solve linear equations in one unknown with fractions, including variables on both sides. Solve word problems involving linear equations in one unknown 	Class work Homework Quiz
10	Solve inequalities	<ul style="list-style-type: none"> Solve linear inequalities in one unknown, with variables on both sides. eg. $8x + 11 \leq 3x - 5, 2x - 1 > 5(x + 3)$. Use linear inequalities to solve word problems. 	Class work Homework Quiz Test
11	STRAIGHT LINE GRAPHS Straight line graphs Simultaneous equations	<ul style="list-style-type: none"> Draw graphs to represent $y = ax + b$ and $ax \pm by = c$, where a, b and c are mostly integers. (Review also lines of $x = a$ and $y = b$) Use the graphs to solve a pair of simultaneous linear equations. 	Class work Homework Quiz

WK	TOPIC	OBJECTIVES	ASSESSMENT
12	GRAPHS OF INEQUATIONS Bounded region Solution set	<ul style="list-style-type: none"> • Illustrate graphically the set of points for which $x > a$, $x \leq a$, $y < b$, $y \geq b$, $y < ax + b$, $ax + by < c$, $ax + by \geq c$, etc, where a, b and $c \in \mathbb{R}$. • Write the inequality or solution set, given the graphical representation. 	Class work Homework Quiz
13	GRAPHS OF INEQUATIONS	<ul style="list-style-type: none"> • Represent graphically, the solution set of two or more of the above inequalities. • Write the inequalities for a given region. • Identify and name points within a given region. 	Class work Homework Quiz Test

WK	TOPIC	OBJECTIVES	ASSESSMENT
1	SIMULTANEOUS EQUATIONS	<ul style="list-style-type: none"> Solve simultaneous linear equations in two unknowns algebraically (elimination method) 	Class work Homework Quiz
2	SIMULTANEOUS EQUATIONS	<ul style="list-style-type: none"> Use simultaneous linear equations to solve word problems. 	Class work Homework Test
3	CONSUMER ARITHMETIC	<ul style="list-style-type: none"> Explain in their own words, the meaning of Simple Interest, Principal and rate of interest. Calculate Simple Interest, Principal, Time, Rate, or total sum received under a simple interest arrangement. 	Class work Homework Quiz
4	CONSUMER ARITHMETIC	<ul style="list-style-type: none"> Calculate Compound Interest for not more than three periods Calculate Appreciation and Depreciation for not more than three periods 	
5	CONSUMER ARITHMETIC	<ul style="list-style-type: none"> Explain in their own words, the meaning of hire purchase, deposit/down payment, instalment and lay-away. Differentiate between hire purchase and lay-away Calculate Hire-purchase cost and solve other problems involving hire purchase. 	Class work Homework Quiz Test
6	CONSUMER ARITHMETIC	<ul style="list-style-type: none"> Calculate wages and overtime pay given various overtime rates and other conditions. Solve various problems involving wages and overtime (eg. Finding the number of hours worked overtime). 	Class work Homework Quiz Test
7	INTERIOR ANGLES OF POLYGONS	<ul style="list-style-type: none"> Recall different types of polygons. Define a convex polygon and a re-entrant polygon Determine the formula for the sum of the interior angles of a polygon. Calculate the sum of the interior angles of a polygon. Calculate the size of missing angle(s) of an irregular polygon Calculate the number of sides of a regular polygon given the sum of the interior angles. Calculate the number of sides of a regular polygon given the size of one interior angle. 	Class work Homework Quiz Test

WK	TOPIC	OBJECTIVES	ASSESSMENT
8	BINOMIAL EXPANSION & FACTORISATION	<ul style="list-style-type: none"> • Write the products of two binomials. • Derive $a^2 - b^2 = (a + b)(a - b)$ • Review factorizing algebraic expressions using HCF: $3a^3b^2c - 9a^2b^5c^2$, etc 	Class work Homework Quiz
9	FACTORISATION	<ul style="list-style-type: none"> • Factorize algebraic expressions by grouping. • Identify and factorize the difference of two squares. 	
10	FACTORISATION	<ul style="list-style-type: none"> • Factorize quadratic expressions of the form $ax^2 + bx + c$ where $a, b, c \in Z$ 	Class work Homework Test

WK	TOPIC	OBJECTIVES	ASSESSMENT
1	COORDINATE – GEOMETRY Gradient y-intercept	<ul style="list-style-type: none"> Define gradient. Calculate the gradient of a straight line, using the ‘vertical rise’ over the ‘horizontal shift’ Write the equation of a line in the form $y = mx + c$, understanding the meaning of m and c. Find, by drawing and by calculation, the x and y –intercepts given the equation of a straight line. Find the equation of a drawn straight line by finding the gradient and the y-intercept 	Class work Homework Quiz
2	COORDINATE – GEOMETRY	<ul style="list-style-type: none"> Without drawing, find the gradient of a line, given the coordinates of two points on the line using the formula, $\frac{y_2 - y_1}{x_2 - x_1}$ Determine the equation of a straight line given <ol style="list-style-type: none"> The gradient and one point on the line The coordinates of two points on the line. 	Class work Homework Quiz Test
3	COORDINATE – GEOMETRY	<ul style="list-style-type: none"> State the relationships between gradients of parallel lines Solve problems involving the gradients of parallel lines. Given the coordinates of two points, determine the length of the line segment joining them. 	Class work Homework Quiz Test
4	COORDINATE – GEOMETRY	<ul style="list-style-type: none"> State the relationship between gradients of perpendicular lines. Solve problems involving the gradients of perpendicular lines. Given the coordinates of two points, finding the coordinates of the mid-point of the line segment. Determining the equation of the perpendicular bisector of a line. 	Class work Homework Quiz Test

LIST OF TEXT BOOKS

Mathematics for Caribbean Schools, Third Edition, Bk. 1; A. Foster, T. Tomlinson

Mathematics for Caribbean Schools, Third Edition, Bk. 2; A. Foster, T. Tomlinson

Mathematics for Caribbean Schools, Third Edition, Bk. 3; A. Foster, T. Tomlinson

Mathematics for Caribbean Schools, Third Edition, Bk. 4; A. Foster, T. Tomlinson

Nelson Caribbean Mathematics, Bk. 1 ; M. Folkes, M. Maxwell

Nelson Caribbean Mathematics, Bk. 2 ; M. Folkes, M. Maxwell

Nelson Caribbean Mathematics, Bk. 3 ; M. Folkes, M. Maxwell

Oxford Mathematics for the Caribbean, Fourth Edition; N. Goldberg, C. King,
C. Lutchman.

MATHEMATICS , A COMPLETE COURSE, WITH CXC QUESTIONS, Volumes 1 & 2;
Raymond Toolsie

CXC Basic Mathematics, A Revision Course, Second Edition; A. Greer, C.E. Layne

CXC Mathematics For Today, Volumes 1&2; G. Buckwell, R. Solomon,
T. Chung Harris