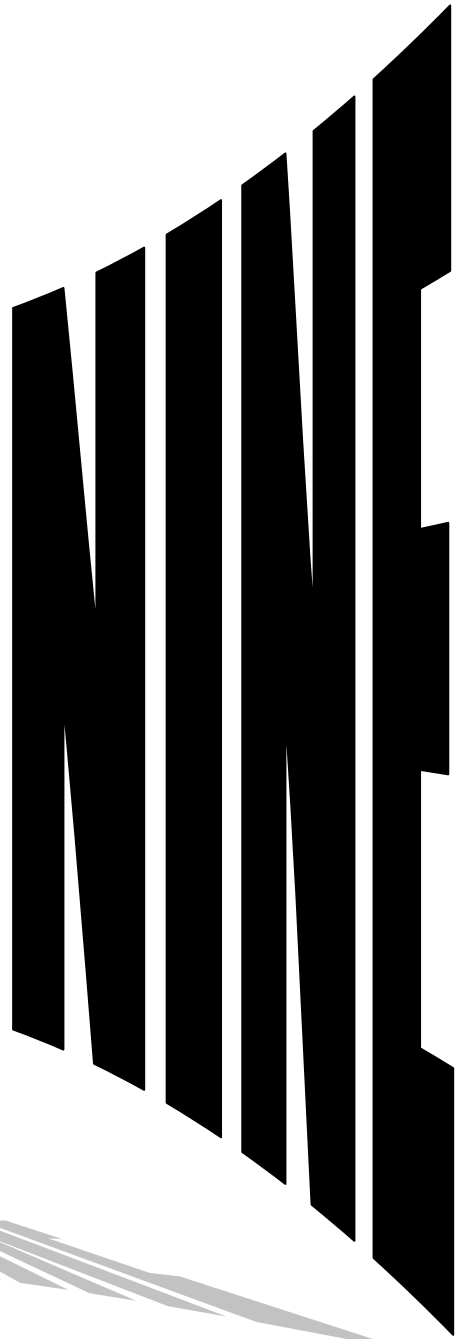


**GRADE**



**NINE**



**IMMACULATE CONCEPTION HIGH SCHOOL**  
**MATHEMATICS DEPARTMENT**  
**GRADES 9 CURRICULUM**  
**2017- 2018**

**INTRODUCTION**

*“Each student is capable of learning mathematics and learning it well.”*

*“Success is best achieved when school and families work together.”*

**GOAL**

To empower all I.C.H.S. students to keep abreast with the demands of the 21<sup>st</sup> century with regards to mathematical skills, attitudes and understanding that will enable them to be successful in career choices and their daily lives.

**FRAMEWORK**

The Mathematics Curriculum has been drafted in keeping with the NSC (STEM) and CXC (CSEC) programmes. It is organized by grade level to run over a period of five (5) years from grade 7 through to grade 11. Please note that the CXC (CSEC) Mathematics Examination which will be administered at the end of grade 11 is **NOT** examined only on grades 10 and 11 objectives. It is examined on the entire five (5) years of work.

The I.C.H.S. Mathematics Department believes that proficiency in most of mathematics is not an inborn characteristic; it is a consequence of persistence, effort, practice, support, encouragement and effective instruction. The use of the curriculum will allow all stakeholders: teachers, parents and students to effectively and efficiently execute the programme.

**TO PARENTS/GUARDIAN**

Ways to help your child succeed in mathematics:

- Always talk about mathematics in positive ways.
- Have high expectation for your child.
- Become familiar with what your child is studying in mathematics.
- Highlight forms of mathematics your child may encounter in her daily life.
- Help your child with her homework; if necessary identify a friend or relative who knows mathematics. Find out if that person would be willing to answer an occasional phone call from your daughter.
- Seek assistance if and when your child experiences difficulty in mathematics.
- Encourage your child.

**GRADE 9**  
**TERM 1**

| <b><u>TOPIC</u></b>   | <b><u>OBJECTIVES</u></b>  |
|---|---|
| 1. <b><u>CONSUMER ARITHMETIC</u></b>                                      | Students should be able to :<br>A<br>1. Solve simple problems involving payment by installment (e.g. Hire purchase, mortgages etc)<br>2. Make comparison between hire purchase and cash price<br>3. Solve problems involving<br>- salaries & wages<br>- commission.<br>B<br>1. use simple interest formula to calculate simple interest, principal, time rate or amount.<br>2. calculate compound interest depreciation and amount (for not more than 3 periods)<br>3. calculate returns on different types of investments.<br>4. solve problems involving simple interest, compound interest and depreciation. |
| 2. <b><u>PROBABILITY</u></b>  | Students should be able to :<br>1. give reasons for probability theory<br>2. use diagrams to represent the outcome of ideal experiments.<br>3. determine experimental and theoretical probability of simple events.<br>4. state a formula for the probability of a successful event<br>5. identify absolutely impossible & absolutely certain event and their probability.<br>6. give probability of events with or without replacement.<br>determine the probability of independent, mutually exclusive and dependent outcomes.  |
| 3. <b><u>STATISTICS II</u></b><br>(statistics I should be reviewed first) | Students should be able to :<br>1. construct a simple frequency table for a given set of data.<br>2. determine measures of central tendency from a table.<br>3. draw a histogram and frequency polygon of data represented in a simple frequency table.<br>4. construct a group frequency table from a set of data.<br>5. given class size, determine class interval, limit, mid-point and upper /lower boundaries for a given a set of grouped data.<br>6. draw histogram and frequency polygon given a group  |

| <u>TOPIC</u> | <u>OBJECTIVES</u>   |
|--------------|---|
|              | <p>data</p> <ol style="list-style-type: none"> <li>7. determine the modal class and median from a set of grouped data</li> <li>8. use the mid-point of the class interval to estimate the mean of data presented in group frequency table.</li> </ol> |

## TERM II

| <u>TOPIC</u>   | <u>OBJECTIVES</u>   |
|--|---|
| <b>4. <u>VECTORS</u></b>   | <p>Students should be able to :</p> <ol style="list-style-type: none"> <li>1. Define a vector.</li> <li>2. Give the different ways in which a vector may be represented.</li> <li>3. Add and subtract vectors using component form i. e. vectors written as <math>2 \times 1</math> column matrices.</li> </ol> <p>Multiply a vector by a scalar number</p>   |
| <b>5. <u>Matrices</u></b>  | <p>Students should be able to :</p> <ol style="list-style-type: none"> <li>1. Define a matrix</li> <li>2. Give the order of a matrix</li> <li>3. Use row and column to identify an entry/element in a given matrix</li> <li>4. Identify equal, identity , square and zero matrix</li> <li>5. Add and subtract matrix</li> <li>6. Multiply a matrix by a scalar number.</li> </ol>   |
| <b>6. <u>Transformation Geometry I</u></b><br><br><b>i) Translation</b><br><b>ii) Reflection</b><br><b>iii) Glide Reflection</b> | <p>Students should be able to:</p> <ol style="list-style-type: none"> <li>1. i). a) define a translation<br/> b) translate a point /figure using coordinates<br/> c) state the relationship between figure and image<br/> d) identify coordinates of image<br/> e) identify translation vector given a figure and its image.</li> <br/> <li>ii) a) define reflection<br/> b) reflect shape in given lines Eg. x-axis, <math>x = 2</math> etc.<br/> c) state the relationship between figure and image<br/> b) identify lines of reflection figure and its image</li> <br/> <li>iii) a) define a glide reflection<br/> b) carry out and locate the image of a point/figure under a <b>glide reflection</b>.</li> </ol> |

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|  | <p>c) state the relationship between figure and image</p> <p>d) find the glide axis given the figure and its image.</p> <p>2. identify each transformation given figure and image.</p>   |
| <b><u>7. Changing Subject of the Formula/ Literal Equations</u></b>    | <p>Students should be able to :</p> <ol style="list-style-type: none"> <li>1. Solve algebraic equations involving brackets and fractions.</li> <li>2. Write a variable in terms of another from a given equation (involving squares and square roots).</li> <li>3. Solve algebraic equations involving brackets and fractions.</li> <li>4. Write a variable in terms of another from a given equation (involving squares and square roots).</li> </ol>   |
| <b><u>8. Calculation of Distances</u></b>                              | <p>Students should be able to :</p> <ol style="list-style-type: none"> <li>1. use calculator to calculate square and square roots of numbers.</li> <li>2 use pythagoras' theorem to calculate the unknown lengths of lines.</li> <li>3. use the distance formula to calculate the length of a line between two points.</li> <li>4. use pythagoras' theorem to prove whether or not a triangle is right-angled.</li> </ol>  |
| <b><u>9. Trigonometry I</u></b>  | <p>Students should be able to :</p> <ol style="list-style-type: none"> <li>1. Determine the sine cosine and tangent ratios of acute angles in a right-angled triangle.</li> <li>2. Use sine, cosine and tangent ratios in the solution of Right-angled triangles.</li> <li>3. Use simple trigonometric ratios to solve problems based on measurements in physical world: <ul style="list-style-type: none"> <li>- Heights and distances</li> <li>- Angles of elevation and depression</li> <li>- Bearings</li> </ul> </li> </ol>   |
| <b><u>10. Coordinate Geometry</u></b><br>(Equations of Straight Lines) | <p>Students should be able to:</p> <ol style="list-style-type: none"> <li>1. Recognize a linear equation connecting two variables</li> <li>2. Plot a straight-line graph of a given equation,</li> <li>3. Calculate the gradient of a straight line from its graph or given two points on the line.</li> <li>4. Recognize the equation and know the gradient for horizontal and vertical lines.</li> <li>5. Find the y-intercept for any straight line from its graph</li> <li>6. Recognize the equation of a straight line in the form <math>y=mx+c</math>, and use this to state the gradient and the y-intercept for any straight line</li> </ol> |

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|  | <p>7. Determine the equation of the line <math>y = mx + c</math> given :</p> <ul style="list-style-type: none"> <li>i) graph of a line</li> <li>ii) the coordinates of two points</li> <li>iii) the gradient and a points</li> </ul> <p>9. graph inequalities</p> <p>10. Calculate midpoint of a line</p> <p>11. Use distance formula when given two points to calculate to find the distance between them</p> <p>12. Identify parallel and perpendicular lines and write their equations.</p> |
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### TERM III

| <u>TOPIC</u>  | <u>OBJECTIVES</u>  |
|---|--|
| 11. <u>Simultaneous Equation</u>  | <p>Students should be able to:</p> <ul style="list-style-type: none"> <li>1. understand and recognize simultaneous equations.</li> <li>2. Solve simultaneous linear equations graphically and Algebraically (using substitution method and Elimination method.)</li> <li>3. Use simultaneous linear equations to solve worded Problems when required.</li> </ul>   |
| 12. <u>Sets II</u><br>(review <b>SET I</b> first)                           | <p>Students should be able to:</p> <ul style="list-style-type: none"> <li>1. Identify shaded regions of a set.</li> <li>2. Write a set in set builder notation.</li> <li>3. Solve numerical problems arising from the intersection of not more than three sets.</li> </ul>   |
| 13. <u>Transformation Geometry II</u><br><br>i) Rotation<br>ii) Enlargement | <p>Students should be able to:</p> <ul style="list-style-type: none"> <li>1. <ul style="list-style-type: none"> <li>i) <ul style="list-style-type: none"> <li>a) define rotation</li> <li>b) rotate a point/ figure about a given centre and in a given direction.</li> <li>c) list the properties of rotation</li> <li>d) find the centre, angle and direction of rotation given the figure and its image</li> </ul> </li> <li>ii) <ul style="list-style-type: none"> <li>a) define an enlargement</li> <li>b) produce an enlargement when given figure, centre of enlargement and scale factor.</li> </ul> </li> </ul> </li> </ul> |

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|  | <p>c) list the properties of enlargement.<br/>d) find centre of enlargement and scale factor when figure and its image is given</p> <p>2. identify each transformation given figure and image.</p> |
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