GRADE ELEVEN

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 21st 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.

TERM I

TOPIC	OBJECTIVES
1.STATISTICS III	Students should be able to : 1. Determine the range, interquartile and semi-interquartile ranges for a set of data 2. Construct a cumulative frequency table for a set of data. 3. Determine from the cumulative frequency table, the proportion and/or percentage of the sample above or below a given value. 4. Draw and use a cumulative frequency curve (Ogive). 5. Estimate the median of a set of grouped data. 6. Analyze statistical data, commenting on the averages, the spread and the shape of the frequency distribution.
2. VECTORS	Students should be able to : Quick review of objectives 1-9 except parallelogram law in objective 4[done in grade 9] 1. Define a vector. 2. Give the different ways in which a vector may be represented. 3. Add and subtract vectors using component form i. e. vectors written as 2×1 column matrices. 4. Add vectors by the triangle or parallelogram laws. 5. Multiply a vector by a scalar number. 6. Recognize that a scalar may be distributed over addition of vectors. 7. Recognize zero vectors and the negative of a vector. 8. Determine the magnitude of a vector. 9. Identify parallel vectors. 10. Associate a position vector $\overrightarrow{OP} = \begin{pmatrix} a \\ b \end{pmatrix}$ with a given point P(a, b) where O is the origin (0, 0) and represent this vector on graph 11. Associate a position vector as a vector of unit length. 12. Use vectors to solve problems in geometry (e.g. proving that points are collinear, proving line segments parallel, prove shapes to be a parallelogram, etc).

TOPIC	OBJECTIVES
3. **TRANSFORMATION GEOMETRY III** (see transformation I & II on the grade 9 syllabus) **TRANSFORMATION GEOMETRY III continues**	Students should be able to : 1. State the relationship between an object and its image as the result of a composition of transformation. 2. State the relationship between an object and its image under reflection in two intersecting lines, not necessarily at right angles. 3. Locate the image of a set of points when each transformation is performed. 4. Perform successive transformations combining any two of enlargement, translation, rotation and reflection. 5. Determine and use the 2×2 matrices associated with the following: enlargement, rotation, reflection. 6. Determine the 2×2 matrix representation of the single transformation which is equivalent to the composition of two linear transformations in a plane (where the origin remains fixed).

4..CIRCLE	Students should be able to :
	1. Solve problems using the following theorems related to the properties of a circle:
	    (a) the angle which an arc of a circle subtends at the centre of a circle is twice the angle it subtends at any point on the remaining part of the circumference.
	    (b) The angle in a semicircle is a right angle.
	    (c) Angles in the same segment of a circle and subtended by the same arc are equal.
	    (d) The opposite angles of a cyclic quadrilateral are supplementary.
	    (e) The exterior angle of a cyclic quadrilateral is equal to the interior opposite angle.
	    (f) A tangent of a circle is perpendicular to the radius of that circle at the point of contact.
	    (g) The lengths of two tangents from an external point to the point of contact on the circle are equal.
	    (h) The angle between a tangent to a circle and a chord through the point of contact is equal to the angle in the alternate segment.
	    (i) The line joining the centre of a circle to the midpoint of a chord is perpendicular to the chord.

TERM II

TOPIC	OBJECTIVES
5. LINEAR PROGRAMMING	Students should be able to : 1. Use linear programming techniques to solve problems involving two variables.
6. GRAPH, GRADIENT AND AREA	Students should be able to : 1, Draw and use the graphs of the functions of the form $y = ax^{-1}$ and $y = ax^{-2}$ for specific domains. 2. Draw and use distance-time graphs and speed-time graphs. 1. Use the gradient of the graph of a linear function to determine the rate of change of one variable with respect to the other. 2. Estimate the value of the gradient of a curve by constructing a straight line at a given point. 3. Estimate the area of a curve by "counting squares" and by the trapezium rule. 4. Apply the idea of a gradient of a curve and area under a curve to problems in the physical, biological and social sciences.
7. TRIGONOMETRY II	Students should be able to : 1. Apply the sine and cosine rules to the solution of non right-angled triangles. 2. Apply the sine and cosine rules to the solution of problems in the physical, biological and social sciences. 3. Calculate the are of a triangle given two sides and the included angle by means of the formula : $\frac{1}{2}$ ab sin C

REVISION FOR EXTERNAL EXAMINATION.

*NB: FUNCTIONS II should be done first. This is a topic carried over from grade 10 (see grade 10 Syllabus).