ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 11

2019 – 2020

A guide for Parents and Students

SUBJECT: Mathematics

Overview of the year:

The curriculum for Mathematics aims to ensure what a teacher may expect to teach and what a student may expect to experience and learn. These aims suggest how the student may be changed by the learning experience.

The aims of curriculum are to encourage and enable students to:

- enjoy mathematics, develop curiosity and begin to appreciate its elegance and power
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking
- develop confidence, perseverance, and independence in mathematical thinking and problem-solving
- develop powers of generalization and abstraction
- apply and transfer skills to a wide range of real-life situations, other areas of knowledge and future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and

  the applications of mathematics

- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other areas of knowledge
- develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics
- develop the ability to reflect critically upon their own work and the work of others

The curriculum prepares the students to achieve the National Agenda Targets 2021 for PISA and TIMSS

TERM ONE Main topic, skills and content:	Probability - Calculate the probability of a single event. - Understand that the probability of an event occurring = 1 – the probability of the event not occurring. - Understand relative frequency as an estimate of probability. - Find probabilities of compound events (or) when they are mutually exclusive, using AND rule and OR rule.	SECRET Effective organisers **BYOD** Students have to organize a presentation or activity to calculate probability of single event and probability of not occurring	**ASSESSMENT 1: Probability & Indices** **ASSESSMENT 2: Linear Programming & Trigonometry**

	➤ Calculate the probability of simple combined events, using possibility diagrams and tree diagrams. ➤ Calculate conditional probability using Venn diagrams, tree diagrams and tables.	Reflective learners and Team Workers: **BYOD** Students would be reflecting the tree diagrams and Venn diagrams using working model by taking a real life example Learning outcome: Students will be able to calculate the probability of simple and compound events. SECRET Self- Managers After learning the graphical representation of inequalities the students will prepare the flip chart to express their learnings by themselves. **BYOD** Creative Thinkers: Students have to create their own L.P.P and have to solve some real life examples by looking at the problems learned in the class. Group /Team work: The students would be making projects in groups on the calculation of feasible region and
	Linear Programming ➤ Solve inequalities and represent them graphically. ➤ Use this representation in the solution of simple linear programming problems. ➤ Find the feasible region for linear inequalities and determine the max. or min. value.	

| | | determine maximum and minimum

Students will be able to solve the inequalities and to find the feasible region

Functions
- Use function notation to describe simple functions. [e.g. f(x) = 3x – 5, f : x→ 3x – 5]
- Form composite functions as defined by gf(x) = g(f(x)).
- Find inverse functions $f^{-1}(x)$.
- Understand the idea of a derived function.
- Use the derivatives of functions of the form ax^n, and simple sums of not more than three of these.
- Apply differentiation to gradients and turning points (stationary points).
- Discriminate between maxima and minima by any method.

Enquiring Activity: students have to create a function of savings of their family by enquiring their parents and have to submit the assignment.

Reflective learning: Students would be submitting a detailed assignment of the idea of desired function and to work in groups

Effective organisers; The students would have to get an example of their choice to determine maximum and minimum

Students will come to know about functions including derivatives

Graphs-Practical Applications
- Interpret and use graphs in practical situations. Draw graphs from given data.

	➢ Apply the idea of rate of change to easy kinematics involving distance-time and speed-time graphs, acceleration and deceleration. ➢ Calculate distance travelled as area under a linear speed-time graph.	Reflective learning: The students would be creating a poster presentation on the topic of area under the speed time graph, acceleration and deceleration <mark>Learning outcome:</mark> Students will come to know about graphs in practical situations including speed time graphs.	
TERM TWO Main topic, skills and content:	Vectors ➢ Represent vector by directed line segments. ➢ Use sum and difference of two vectors. ➢ Multiply a vector by a scalar. ➢ Calculate the magnitude of the vector. ➢ Use position vectors.	<mark>SECRET</mark> Reflective learners The students would have to submit the notes taken from the lesson and have to add an example of each learned concept on vectors <mark>Learning outcome:</mark> Students will come to know about sum, difference and magnitude of vectors.	**ASSESSMENT 1:** **Vectors & Geometry**

	Number Sequence ➢ Recognize patterns in sequences and relationships between different sequences. ➢ Generalize to simple algebraic statements (including expressions for the nth term) relating to Linear, Quadratic or other sequences that are given. ➢ Express the recurring decimals as a fraction in its simplest form. **Transformation** ➢ Use the following transformations of the plane: reflection (M), rotation (R), translation (T), enlargement (E), and their combinations. ➢ Identify and give precise descriptions of transformations connecting given figures.	<mark>SECRET</mark> Self managers: Students would have to create an interesting class board activity of special type of pattern as a working model Group Activity: Power point presentation on the solution of linear and quadratic sequence <mark>Learning outcome:</mark> Students will come to know to recognize and to find last and sum to n terms of A.P and Quadratic sequence <mark>SECRET</mark>	
TERM THREE Main topic,	**Transformation (continues)** ➢ Use the following transformations of the plane: reflection (M), rotation (R), translation (T), enlargement (E), and their	Creative thinkers: Students would have to prepare a working model for each transformation.	**ASSESSMENT2: Graphs & Transformations**

| skills and content: | combinations.
➤ Identify and give precise descriptions of
transformations connecting given figures.

**REVISION FOR IGCSE EXAM –
TOPIC WISE** | Reflective Learners: Ask the students to make a flip chart based on matrix transformations.

<mark>Learning outcome:</mark> Students will come to know how to transform figures. | |