



ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 10

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	GEOMETRY: Similarity <ul style="list-style-type: none">➤ Use and interpret the geometrical terms similarity and congruence➤ Use the basic congruence criteria for triangles (SSS, ASA, SAS, RHS).➤ Calculate the length of similar figures.➤ Use the relationships between areas of similar figures.➤ Use the relationship between volumes of similar figures.	TOPIC: SIMILARITY LEARNING SKILL: SECRET BYOD Make a research on Difference between similarity & congruence using real life objects (CT, RL, E, TW) LEARNING OUTCOMES: Students will learn the difference between congruence and similarity of classes of figures (such as circles, parallelograms) in terms of the number of variable lengths in the class, applies the knowledge acquired in real –life situations	ASSESSMENT 1: SIMILARITY ASSESSMENT 2: MENSURATION
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	<p>MENSURATION</p> <ul style="list-style-type: none"> ➤ Carry out calculations involving the perimeter and area of compound geometrical shapes ➤ Carry out calculations involving the circumference and area of circle. ➤ Solve problems involving sector area and arc length ➤ Carry out calculations involving the volume and surface area of cuboid, prism and cylinder. ➤ Carry out calculations involving the volume and surface area of pyramid, sphere and cone. <p>ALGEBRA 2:</p> <p>Variation</p> <ul style="list-style-type: none"> ➤ Express direct and inverse variation in algebraic terms ➤ Find unknown quantities using direct variation ➤ Find unknown quantities using inverse variation ➤ Calculate the factor and percentage variation 	<p>https://en.wikipedia.org/wiki/Similarity_(geometry)</p> <p>TOPIC: MENSURATION LEARNING SKILL: SECRET BYOD</p> <p>Deriving surface area of Cylinder (E, CT, RL, TW)</p> <p>LEARNING OUTCOMES: Students will be able to derive the formula for surface area of Cylinder by constructivism method, applies it in real life situation wherever applicable</p> <p>https://www.mathopenref.com/arcsectorarea</p> <p>https://www.varsitytutors.com/sat_math-help/how-to-find-the-area-of-a</p> <p>TOPIC: VARIATION LEARNING SKILL: SECRET</p> <p>Differentiate between direct & inverse variation with real-life examples (Paragraph writing) (EO, RL, SM)</p> <p>LEARNING OUTCOMES: Students will be able to differentiate between direct & inverse variation in real life situation</p> <p>https://www.math-only-math.com/what-is-variation</p>	
<p>TERM TWO</p> <p>Main topic, skills and content:</p>	<p>GEOMETRY:</p> <p>Circle Theorem</p> <ul style="list-style-type: none"> ➤ Calculate the unknown angles using angles formed with parallel lines ➤ Calculate the unknown angle using the 	<p>TOPIC: CIRCLE THEOREM LEARNING SKILL: SECRET</p> <p>Geoboard activity to prove circle theorems (EO, CT, RL, TW)</p> <p>LEARNING OUTCOMES:</p>	<p>ASSESSMENT 1: CIRCLE THEOREM</p>

	<p>Property-Angle in a semicircle</p> <ul style="list-style-type: none"> ➤ Calculate the unknown angle using the Property-Angle at the center of the circle is twice the angle at the circumference ➤ Calculate the unknown angle using the Property-Angle between the tangent and the radius of the circle ➤ Calculate the unknown angle using the Property-Two tangents draw to a circle are of equal length ➤ Calculate the unknown angle using the Property-Opposite angles in a cyclic quadrilateral add up to 180 ➤ Calculate unknown angles using Alternate Segment Theorem <p>TRIGONOMETRY</p> <ul style="list-style-type: none"> ➤ Solve trigonometrical problems in two dimensions involving angles of elevation and depression ➤ Solve problems using the sine and cosine rules for any triangle and the formula area of triangle ➤ Solve simple trigonometrical problems in three dimensions including angle between a line and a plane. ➤ Interpret and use three-figure bearings. ➤ Recognize, 	<p>Students will be able to explore two-dimensional shapes, free to generate creative designs based on the theorems learned.</p> <p>TOPIC: TRIGONOMETRY LEARNING SKILL: SECRET Construction of Clinometer- application in angle of elevation and depression (EO, CT, TW, E) LEARNING OUTCOMES: Students will be able to determine the angle of elevation of an object by clinometer and the use of it to determine the height of an object at a known distance</p>	<p>ASSESSMENT 2: TRIGONOMETRY</p>
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	<p>Sketch and interpret graphs of simple trigonometric functions.</p> <ul style="list-style-type: none"> ➤ Solve trigonometric equations for values between 0 and 360 degrees 		
<p>TERM THREE</p> <p>Main topic, skills and content:</p>	<p>Set Theory</p> <ul style="list-style-type: none"> ➤ Use language and notation to describe sets and represent relationships between sets ➤ Use Venn diagrams to describe sets and represent relationships between sets ➤ Use Venn diagrams to solve logical problems <p>GRAPHS</p> <ul style="list-style-type: none"> ➤ Construct tables of values for functions (quadratic, reciprocal, exponential) ➤ Solve associated equations approximately by graphical methods. ➤ Estimate gradients of curves by drawing tangents ➤ Determine the equation of a straight line parallel and perpendicular to a given line. ➤ Find the gradient of parallel and perpendicular lines. 	<p>TOPIC: SET THEORY LEARNING SKILL: SECRET Interactive technology based session – Venn diagram (EO, CT, RL, TW) LEARNING OUTCOMES: Students will be able to use a Venn diagram to compare and contrast information and recognize relationships between concepts</p> <p>TOPIC: GRAPHS LEARNING SKILL: SECRET BYOD Geogebra for solving curves (EO, RL, CT, SM) LEARNING OUTCOMES: Students will be able to personalize their own creations through the adaptation of interface, manipulate variables easily by simply dragging “free” objects around the plane of drawing or by using sliders, will get the opportunity to solve problems by investigating mathematical relations dynamically.</p>	<p>ASSESSMENT 1: SET THEORY</p>