



ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 9

2019 – 2020

A guide for Teachers

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	TOPICS Numbers Approximations and estimation <ul style="list-style-type: none">➤ Identify and use natural numbers, integers, prime numbers, square numbers, cube numbers, common factors	SECRET- 21ST Learning Skills Upper Bound and Lower Bound Learning skills: (Self Managers, Effective Organizers, Reflective Learners, Team Workers) Treasure Hunt Game (A group of question cards and answer cards will be given. On their own students discuss in group and hunt for proper question and answer card, come to a conclusion and will be able to complete the given Loop)	ASSESSMENT Numbers. (Approximation, estimation)
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	<p>and common multiples, rational and irrational numbers, real numbers reciprocals.</p> <ul style="list-style-type: none"> ➤ Give appropriate upper and lower bounds for data given to a specified accuracy. ➤ Obtain appropriate upper and lower bounds to solutions of simple problems. ➤ Calculate simple interest using given data ➤ Calculate compound interest using given data ➤ Use exponential growth and decay. <p>Map Scale</p> <ul style="list-style-type: none"> ➤ Interpret and make simple scale drawings. ➤ Understand and apply map ratio ➤ Understand and use map scales. 	<p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students are able to give upper and lower bound for data given to a specified accuracy. ➤ Students are able to obtain appropriate upper and lower bounds to the solution of simple problem. <p>Map Scale</p> <p>Learning skills: (Self Managers, Effective Organizers, Creative Thinkers, Reflective Learners, Team Workers)</p> <p>Students are asked to discuss on their own on real life application on Map scale and select the object from their class room environment measure the dimensions of the object and make the scale of the object in their note book.</p> <p>BYOD Extended Learning (Home Work)-Students will measure the dimensions of different items found in their dining room and make a scale drawing of the entire dining room on A3 size paper.</p> <p>https://www.mathsisfun.com/definitions/scale-drawing</p> <p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students will be able to interpret and make simple scale drawings. ➤ Students will be able to draw the object in their note book using the map scale 	
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Algebra 1

. Brackets and simplifying

- Simplify algebraic expressions by expanding products of two binomials
- Simplify or transform expressions by taking out single-term common factors

Simultaneous Equations

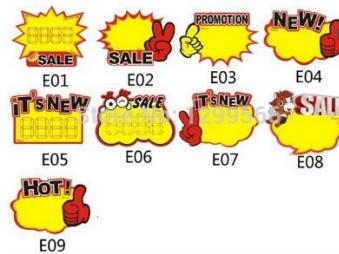
- Solve simultaneous linear equations in two unknowns. (Elimination method)
- Solve simultaneous linear equations in two unknowns. (Substitution method)
- Solve problems involving simultaneous equations.

ASSESSMENT Algebra 1

Simultaneous Equation

Learning skills: (Self Managers, Effective Organizers, Creative Thinkers, Reflective Learners Team Workers)

BYOD Super market Price Tag Activity



Using these they create their own word problems (Story writing) and prepare a creative poster.

Learning Outcome:

- Students will be able to create their own word problem and frame the simultaneous equation in two variables.
- Students will be able to solve simultaneous linear equations in two variables.

	<p>Algebra 2 Indices</p> <ul style="list-style-type: none"> ➤ Apply the index laws of multiplication and division of positive integer powers ➤ Apply the rules of indices with negative and fractional powers. 	<p>BYOD: Students are asked bring their own device. They make a research on the laws of indices. Find different laws and their application. Prepare a presentation and present to the class in groups of four followed by class discussion.</p> <p>www.ultimatemaths.com › powers-and-the-laws-of-indices</p>	
<p>TERM TWO</p> <p>Main topic, skills and content:</p>	<p>Trigonometry</p> <ul style="list-style-type: none"> ➤ Apply trigonometric ratios to calculate side of a right-angled triangle. ➤ Apply trigonometric ratios to calculate an angle of a right-angled triangle ➤ Solve trigonometrical problems in two dimensions involving angle of elevation and depression. ➤ Use bearings to solve problems involving distance and direction ➤ Interpret and use three-figure bearings in scale drawing. <p>Algebra 1&2 Change the subject of a formula Rearrange formulae to change the subject.</p> <p>Algebraic Fractions</p> <ul style="list-style-type: none"> ➤ Simplify algebraic fractions. ➤ Add and subtract algebraic fractions 	<p>Trigonometry (Self -Managers, Effective Organizers, Creative Thinkers, Reflective Learners Team Workers)</p> <p>Clinometer Out- door activity (Students measure the height of the flag pole, height of the tree using clinometer using concept of angle of elevation) BYOD –Project (Students (One in a group)) research and identify different real life situations involving angle of elevation and angle of depression, solve the problem based on angle of elevation. After which student create their own collage using laptops.</p> <p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students will be able to measure the height of the flag pole and understand the concept of angle of elevation. ➤ Students will be able to solve the problems based on angle of elevation. 	<p>ASSESSMENT Trigonometry</p>

	<p>Factorizing</p> <ul style="list-style-type: none"> ➤ Factorizes a quadratic expression (ax^2+bx+c). ➤ Factorizes quadratic expression including the difference of squares. <p>Quadratic Equation</p> <ul style="list-style-type: none"> ➤ Solve quadratic equations by factorization. ➤ Solve quadratic equations by use of the formula. ➤ Solve quadratic equations by completing the square ➤ Solve word problems on quadratic equation. 	<p>Quadratic Equation</p> <p>https://www.mathsisfun.com/algebra/quadratic-equation</p> <p>BYOD: Research work/ Enquires</p> <p>Students bring laptops and make a research and create word problems on real life situation involving quadratic equations. They write a report on how quadratic equations are used in different real life situation.</p> <p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students will be able to research and create word problems on real life situation involving quadratic equations. 	
<p>TERM THREE</p> <p>Main topic, skills and content:</p>	<p><u>Surface area and volume of prisms</u></p> <ul style="list-style-type: none"> ➤ Calculate the surface area of prisms (Triangular, parallelogram and Cylinder). ➤ Find the Volume of prisms (Triangular based, trapezium based parallelogram based and Cylinder) 	<p>Surface area and Volume.</p> <p>Extended Learning- Project work</p> <p>(Designing a model of geometric city using buildings involving prism shapes, measuring their volume and surface area)</p> <p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students will be able to design a model of geometric city using 3D shapes and able to measure the volume and surface area. 	

	<p>Statistics</p> <ul style="list-style-type: none"> ➤ Construct and read scatter diagram using understanding of correlation ➤ Construct a line of best fit on a scatter diagram ➤ Use a line of best fit to estimate values ➤ Construct and interpret histograms with equal and unequal intervals. ➤ Calculate an estimate of the mean, median and modal class for grouped and continuous data. ➤ Construct cumulative frequency diagrams ➤ Estimate and interpret the median, percentiles, lower quartile, upper quartile and interquartile range. ➤ Construct and interpret box-and-whisker plots ➤ Construct and interpret stem-and leaf diagram 	<p>Statistics Self- Managers, Effective Organizers, Reflective Learners Team Workers)</p> <p>Students record the temperature of Dubai and Rasalkaimah for the month of May (this will be done at home), prepare a frequency table and the histograms to compare the data. (Class work)</p> <p>Learning Outcome:</p> <ul style="list-style-type: none"> ➤ Students will be able to prepare a frequency table and represent the data through Histogram finally compare the data. 	<p>ASSESSMENT (STATISTICS)</p>
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