ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 8

2019 – 2020

A guide for Parents and Students

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 and GL Progress Test(PTM)

TERM ONE Main topic, skills and content:	**Numbers** ➢ Find HCF and LCM using prime factorisation. **Algebra** ➢ Understand and apply the rules of indices. ➢ Generate terms of a sequence from either a term- to-term or a position-to term rule. ➢ Recognise arithmetic sequence and find the nth term ➢ Recognise geometric sequences and find the nth term ➢ Apply the nth term to find missing terms in arithmetic sequence and geometric sequence. **Pythagoras theorem** ➢ Apply Pythagoras Theorem to find missing sides in a right- angle triangle ➢ **Solve real-life problems using Pythagoras Theorem**	**SECRET- 21ST Learning Skills** **Algebra** **BYOD** https://www.youtube.com/watch?v=1hPutAnKlPo Students will watch the given link, understand and discuss among them. • Recognizing arithmetic sequence • The nth term of Arithmetic Sequence • Students come out with ideas of real life application of Sequence. • Students will discuss in groups then will share their ideas **Learning outcome** Students will be able to recognise arithmetic sequence and find the nth term and will present a PPT in class **BYOD** **Pythagoras Theorem** <u>**Activity – group- outdoor**</u> https://www.youtube.com/watch?v=vI5GJpmNv0w • Students will watch the given link, understand and discuss among them. • Students will discuss about the application of Pythagoras theorem • They will be taken outdoor to relate and come out with their ideas of application of theorem and present it the next class as a presentation (ICT Based) • Students can make a poster/ video • Students will come and present in class **Learning outcome:** Students will make a poster on real life application of Pythagoras Theorem	**ASSESSMENT 1: Numbers and Algebra** Mental Maths Test 1 **ASSESSMENT 2: Pythagoras Theorem**

	Position and Movement ➢ Carry out an enlargement with the given center of enlargement and positive scale factor greater than one. ➢ Carry out an enlargement with the given center of enlargement and positive fractional scale factor. ➢ Find the center of enlargement and the scale factor of an enlarged shape **Metric Units** ➢ Convert between metric units (converting measurements of length, mass, area and volume) ➢ Convert between miles and kilometers	**Position and Movement** **Activity – poster making-** **BYOD** **https://www.youtube.com/watch?v=22zNVcV_iKQ** • Students can bring Laptop • Charts • Colors • Students will watch the given link, understand and discuss among them. • Students discuss about the application of position and movement • Students will make posters on real life application of enlargement. • Posters will be shown in class • **Will discuss its application in UAE** **Learning outcome:** Students will make a collage on UAE buildings based on the topic- Position and movement **Metric Units** **Learning Skill- SECRET** **INNOVATIVE GAME-** • Students will discuss the method to convert mile to kilometers and vice versa • Students can use I pad, laptop, tab. • Students will innovate a game to help in teaching the above conversion to their younger ones • Each one from group can come and explain to class **Learning Outcome** Students will innovate a creative game on metric units	

TERM TWO Main topic, skills and content:	**Algebra** ➢ Expand brackets and simplify the expressions. ➢ Simplify algebraic expressions including fractions ➢ Factorize an expression by taking out highest common factors ➢ Substitute positive and negative numbers in an expression. ➢ Construct and solve linear equations with unknowns on both sides	**Algebra** **Learning skill: SECRET** **ACIVITY** **SUPER MARKET FLYER** • Students should bring supermarket flyers, chart paper, scissors • Students, in group will cut and collect flyers, they will make equations and solve on their own followed by discussion in class **Learning Outcome** Students will create their own equations, solve and apply in real life.	Mental Maths Test 1
	Perimeter, Area, Volume and Surface Area ➢ Apply formulae to solve problems involving area of a - triangle, parallelogram and trapezium ➢ Apply formulae to solve problems involving area and	**Perimeter, area, volume** **Learning skill - SECRET** **RESEARCH WORK** • Students in groups discuss on their own and find out 2D or 3D shapes from school premises • Students will bring measuring tape, scale, pencil, ruler • Students will calculate volume or perimeter/area of compound shapes	**ASSESSMENT 1:** **Perimeter, area, volume and surface area, Algebra**

		circumference of the circle. ➢ Calculate perimeter and area of compound shape ➢ Apply formulae to calculate and solve problems involving the volume of cube and cuboid ➢ Apply formulae to calculate and solve problems involving surface area of cube and cuboid	**Learning Outcome:** Students will be able to calculate the volume /perimeter / area of 2D & 3 D shapes and link with shapes in their school.	
		Graph ➢ Recognise and draw graphs of linear equations ➢ Find the midpoint of the line segment. ➢ Find slope and y intercept from linear graphs ➢ Find the equation of the line passing through the given coordinates.	**Graph** **LEARNING SKILL: SECRET** Activity Students in group will discuss and research on graphs Y intercept and slope They will make posters & Will discuss in class **BYOD Flip Lesson** https://www.youtube.com/watch?v=eb70zNBh8VM • Students will watch the given link, understand and discuss among them. • Students need to bring chart paper, white paper, scissors device • In group/individual students will do the activity • Students explain the concept in class • A flip lesson conducted by group of students will be assessed by teacher Learning outcome: Students will make posters on Y intercept and slope from linear graph	**ASSESSMENT 2:** **Graph and ratio** **and proportion**

| | | **Ratio and Proportion**
➢ Compare lengths, areas and volumes using ratio notation
➢ Solve problems involving direct proportion including graphical and algebraic representations.
➢ Solve problems involving indirect proportion including graphical and algebraic representations.
➢ Use compound units such as speed, pressure and density to solve problems
➢ Calculate using money and convert from one currency to another. | Ratio and Proportion
Learning skill: SECRET
https://mathleague.com › mathreference › 31-mathleaguewebsite › general

ACTIVITY:
Students of different expatriates will be asked to bring their currency and currency value of different countries will be compared with UAE currency value and they will also be asked to go to money exchange and know the currency values of other countries. They will prepare a Poster on the currency values of different countries.
Learning Outcome:
Students will be aware of currencies of different countries and their currency values compared with other nations and with UAE | |
| | | **Angles**

➢ Deduce and apply the sum and size of an interior angle in a regular polygon

➢ Use the fact that sum of exterior angle in any polygon is 360^0 | Angles
Learning skill: SECRET
Activity:
Students will be asked to draw different polygons and then they have to divide in to triangles to get the total angle of the polygon which is same as using the formulae to find the sum and size of an interior angle in a regular angle. Students can do it in device using nets of shape.
Learning Outcome:
Students will be able to do and experience as how a formula is derived and try for other shapes too. | |

TERM THREE Main topic, skills and content:	**Probability** ➢ Understand that the probability of an event occurring = 1 – the probability of the event not occurring. ➢ Find and list systematically all possible mutually exclusive outcomes for single events and for two successive events. **Statistics** ➢ Construct frequency table for discrete and continuous grouped data. ➢ Estimate mean and modal class for set of grouped data **Symmetry** ➢ Recognise rotational and line symmetry	Probability Learning skill: SECRET ACTIVITY Materials required • Coins • Dice • Paper • Pen • Students learn the concept by doing real life experiment of coins and dice • Students will explain in class • Assessed by teacher Learning outcome: Student will record the result from the hands on activity will discuss in class **Statistics** Learning skill SECRET BYOD RESEARCH WORK https://www.cos.edu › Faculty › georgew › Tutorial › CT_MeanGroup Students collect data of height from all year 8 boys/girls Prepare tally chart Prepare frequency table Research on mean height Find modal height Present in the class Explanation by a member of group Learning outcome Students will conduct a survey and record the results and calculate mean and modal class Symmetry Learning skill- SECRET Activity Poster making on real life application on rotational symmetry in two dimensions Students will recognize symmetry properties and discuss in class	Mental Maths Test 1 **ASSESSMENT 1: Probability & Statistics**

	(Including order of rotational symmetry) in two dimensions. ➤ Recognise symmetry properties of the prism (including cylinder) and the pyramid(including cone).	**Learning outcome:** Students will make poster on real life application on rotation symmetry in two dimension.	