



ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 11

2021 – 2022

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

<b>TERM ONE</b> Main topic, skills and content:	<p><b>Probability</b></p> <ul style="list-style-type: none"> <li>➤ Calculate the probability of a single event.</li> <li>➤ Understand that the probability of an event occurring = <math>1 -</math> the probability of the event not occurring.</li> <li>➤ Understand relative frequency as an estimate of probability.</li> <li>➤ Calculate probabilities of compound events (or) when they are mutually exclusive, using AND rule and OR rule.</li> <li>➤ Calculate the probability of simple combined events, using possibility diagrams, tree diagrams and Venn diagram</li> <li>➤ Calculate conditional probability using Venn diagrams, tree diagrams and tables.</li> </ul> <p><b>Linear Programming</b>  Derive and solve linear inequalities.  (Including representing and interpreting inequalities on a number line. Interpretation of results may be required)</p> <ul style="list-style-type: none"> <li>➤ Solve inequalities and represent them graphically.</li> <li>➤ Use this representation in the solution of simple linear programming problems.</li> </ul>	<p><b>ASSESSMENT 1:</b>  <b>Probability</b></p>	<p><b>LITERACY</b>  Unit-Probability  <b>Listening skill task-</b> <a href="https://www.edpuzzle.com">www.edpuzzle.com</a>  <b>Starter</b>  <a href="https://wordwall.net/resource/271468/mathsmaths-anagrams">https://wordwall.net/resource/271468/mathsmaths-anagrams</a>  <b>Flip tiles</b>  0:06</p> <p><a href="https://www.mathsisfun.com/puzzles/alphabet-numbers.html">https://www.mathsisfun.com/puzzles/alphabet-numbers.html</a>  <b>Alphabet Numbers Puzzle</b></p> <p>The Puzzle:</p>  <p>Using any letter only once, what are the largest and smallest numbers that you can write down in words?</p> <p>Example: EIGHTY  But not NINETY as N is used twice</p> <p>Bonus 1: allow negatives such as MINUS TWO  Bonus 2: allow calculations such as TWO SQUARED</p> <p><b>Unit-Linear Programming</b>  <b>Listening skill task-</b> <a href="https://www.edpuzzle.com">www.edpuzzle.com</a>  <b>Starter</b>  <a href="https://wordwall.net/resource/271468/mathsmaths-anagrams">https://wordwall.net/resource/271468/mathsmaths-anagrams</a>  <b>Balloon pop</b></p>
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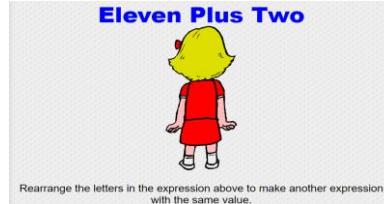
- Find the feasible region for linear inequalities and determine the max. or min. value.

## GRAPHS

- Find the gradient of a straight line. Calculate the gradient of a straight line from the coordinates of two points on it.
- Calculate the length and the coordinates of the midpoint of a straight line from the coordinates of its end points
- Interpret and obtain the equation of a straight -line graph.
- Determine the equation of a straight line parallel to a given line.
- Find the gradient of parallel and perpendicular lines.



[https://www.transum.org/Software/SW/Starter\\_of\\_the\\_day/starter\\_June26.ASP](https://www.transum.org/Software/SW/Starter_of_the_day/starter_June26.ASP)



## Plenary

Write the new words you have learned this lesson and what they mean in mathematics (also alternative meanings in other curriculum areas)

## Unit-Graphs

**Listening skill task-** [www.edpuzzle.com](http://www.edpuzzle.com)

## Starter

<https://wordwall.net/resource/271468/mathematics-maths-anagrams>

## Open the box



[https://www.transum.org/Software/SW/Starter\\_of\\_the\\_day/starter\\_June15.ASP](https://www.transum.org/Software/SW/Starter_of_the_day/starter_June15.ASP)

	<ul style="list-style-type: none"> <li>➤ Construct tables of values and draw graphs for functions of the form <math>ax^n</math> (and simple sums of these) and functions of the form <math>ab^x + c</math></li> <li>➤ Recognise, sketch and interpret graphs of functions (Linear, quadratic, cubic, reciprocal and exponential. Knowledge of turning points and asymptotes is required.)</li> <li>➤ Draw and interpret graphs representing exponential growth and decay problems.</li> <li>➤ Estimate gradients of curves by drawing tangents</li> <li>➤ Solve linear and quadratic equations approximately, including finding and interpreting roots by graphical methods. (Find turning points of quadratics by completing the square.)</li> </ul>		<p><b>Maths Crossword</b></p> <table border="1"> <tr><td>Across</td><td></td></tr> <tr><td>2.</td><td>This type of number is the most important to factor.</td></tr> <tr><td>3.</td><td>Twelve inches.</td></tr> <tr><td>4.</td><td>Letters representing numbers.</td></tr> <tr><td>6.</td><td>Three squared.</td></tr> <tr><td>7.</td><td>Nothing with a belt.</td></tr> <tr><td>9.</td><td>45 degrees less than right.</td></tr> <tr><td>11.</td><td>A regular polygon with interior and exterior angles equal.</td></tr> <tr><td>Down</td><td></td></tr> </table> <p><b>Plenary</b></p> <ol style="list-style-type: none"> <li>1. Self assessment – record what you've learnt, any difficulties you have had and set your personal targets</li> <li>2. Write a recipe with ingredients as the keywords from today's topic</li> </ol>	Across		2.	This type of number is the most important to factor.	3.	Twelve inches.	4.	Letters representing numbers.	6.	Three squared.	7.	Nothing with a belt.	9.	45 degrees less than right.	11.	A regular polygon with interior and exterior angles equal.	Down	
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<b>TERM TWO</b> <b>Main topic, skills and content:</b>	<b>Vectors</b> <ul style="list-style-type: none"> <li>➤ Represent vector by directed line segments.</li> <li>➤ Add and subtract vectors.</li> <li>➤ Multiply a vector by a scalar.</li> <li>➤ Calculate the magnitude of the vector.</li> <li>➤ Use position vectors.</li> </ul>	<b>ASSESSMENT 1: Vectors</b>	<p>Unit-Vectors</p> <p><b>Listening skill task-</b> <a href="https://www.edpuzzle.com">www.edpuzzle.com</a></p> <p><b>Starter</b></p> <p><a href="https://wordwall.net/resource/271468/mathematics/math-anagrams">https://wordwall.net/resource/271468/mathematics/math-anagrams</a></p> <p><b>Word search</b></p> <table border="1"> <tr><td>attacassit</td><td>simnu</td></tr> <tr><td>spagtohgn</td><td>idveid</td></tr> <tr><td>prhag</td><td>locirc</td></tr> <tr><td>suanq</td><td>lerunooelt</td></tr> <tr><td>tfonari</td><td>uidndaat</td></tr> <tr><td>wintgurt</td><td>lacmdai</td></tr> <tr><td>tylirphoboi</td><td>venu</td></tr> <tr><td>unhrend do</td><td>timissoahne</td></tr> <tr><td>ausgleib</td><td>egtorpcser</td></tr> </table> <p><a href="https://www.transum.org/Software/SW/Starter_of_the_day/starter_June23.ASP">https://www.transum.org/Software/SW/Starter_of_the_day/starter_June23.ASP</a></p>	attacassit	simnu	spagtohgn	idveid	prhag	locirc	suanq	lerunooelt	tfonari	uidndaat	wintgurt	lacmdai	tylirphoboi	venu	unhrend do	timissoahne	ausgleib	egtorpcser
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	<p><b>Number Sequence</b></p> <ul style="list-style-type: none"> <li>➤ Express the recurring decimals as a fraction in its simplest form.</li> <li>➤ Recognize patterns in sequences including the term to term rule and relationships between different sequences.</li> <li>➤ Generalize to simple algebraic statements (including expressions for the nth term) relating to Linear, Quadratic or other sequences that are given.</li> </ul>		<p><b>Unit-Number sequence</b></p> <p><b>Listening skill task-</b> <a href="https://www.edpuzzle.com">www.edpuzzle.com</a></p> <p><b>Starter</b></p> <p><a href="https://wordwall.net/resource/271468/mathsmaths-anagrams">https://wordwall.net/resource/271468/mathsmaths-anagrams</a></p> <p><b>Random cards</b></p>  <p><a href="https://www.transum.org/Software/SW/Starter_of_the_day/starter_June7.ASP">https://www.transum.org/Software/SW/Starter_of_the_day/starter_June7.ASP</a></p> <p>How many Alphanumbetical numbers can you find? These are numbers which when written as words have all their letters in alphabetical order.</p>  <p><b>Plenary</b></p> <ol style="list-style-type: none"> <li>1. Aide memoirs – students devise their own ideas/mnemonics eg picture/visual clues to the meaning of key words (eg parallel or Never Eat Shredded Wheat) linked to objective</li> </ol>
<b>TERM TWO</b> <b>Main topic, skills and content:</b>	<p><b>Transformation</b></p> <ul style="list-style-type: none"> <li>➤ Describe a translation by using a vector represented by <math>\begin{pmatrix} x \\ y \end{pmatrix}</math>.</li> <li>➤ Reflect simple plane figures.</li> <li>➤ Rotate simple plane figures through multiples of <math>90^\circ</math>.</li> </ul>	<p><b>ASSESSMENT2: Transformations</b></p>	<p><b>Unit-Transformation</b></p> <p><b>Listening skill task-</b> <a href="https://www.edpuzzle.com">www.edpuzzle.com</a></p> <p><b>Starter</b></p> <p><a href="https://wordwall.net/resource/271468/mathsmaths-anagrams">https://wordwall.net/resource/271468/mathsmaths-anagrams</a></p> <p><b>Quiz show</b></p>

Term 3	<ul style="list-style-type: none"> <li>➤ Construct given translations and enlargements of simple plane figures. (Positive, fractional and negative scale factors for enlargements)</li> <li>➤ Recognise and describe reflections, rotations, translations and enlargements.</li> </ul> <p><b>REVISION FOR IGCSE EXAM – TOPIC WISE</b></p>	 <p><a href="https://www.mathsisfun.com/puzzles/a-brave-puzzle.html">https://www.mathsisfun.com/puzzles/a-brave-puzzle.html</a></p> <p>The Puzzle:</p> <table border="1" data-bbox="1184 507 1290 616"> <tr><td>B</td><td>R</td><td>A</td><td>V</td><td>E</td></tr> <tr><td>E</td><td>B</td><td>R</td><td></td><td></td></tr> <tr><td>V</td><td></td><td></td><td>B</td><td></td></tr> <tr><td>B</td><td>R</td><td></td><td></td><td></td></tr> <tr><td>E</td><td>B</td><td></td><td></td><td></td></tr> </table> <p>Only for the brave, this one! This square has eleven letters missing, which you have to replace. Every row, column AND the main diagonals contain all the letters in the word "BRAVE". That reminds me, I must see the Postman about all those missing letters.</p> <p><b>Plenary</b></p> <ol style="list-style-type: none"> <li>1. Take one minute to compose two sentences in your head to explain what we have learnt and how we have learnt it, using the key words from the lesson</li> <li>2. Write a twitter message to your friend explaining on key concepts that you have learned today</li> </ol> 	B	R	A	V	E	E	B	R			V			B		B	R				E	B			
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