



ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 10

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

TERM ONE

Main topic,
skills and
content

GEOMETRY:

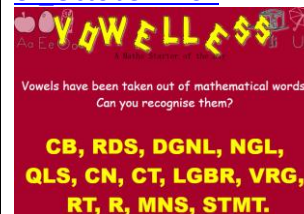
Similarity

- 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.
- Use the relationship between volumes and area of similar figures.

ASSESSMENT 1: SIMILARITY

STARTER

https://www.transum.org/Software/SW/Starter_of_the_day/starter_October1.ASP



https://www.transum.org/Software/SW/Starter_of_the_day/starter_February6.ASP

GUITAR FOR SALE A Mathematics Lesson Starter Of The Day

On Monday Evelyn bought a guitar for £12
On Tuesday she sold it for £23
On Wednesday she bought it back for £31
On Thursday she needed money for a football match so she again sold her guitar, this time for £41.

Overall, did Evelyn make or lose money?

Plenary

Complete the following sentences in your book:



Plenary - WhatsApp message

Write a WhatsApp message to your friend telling them what you have learnt this lesson!!



ALGEBRA 2:

Variation

- 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

STARTER-BRAIN IN GEAR

EXAMPLE

DITDIONA can be rearranged to make **ADDITION**

STARTER

Work out the following Mathematical anagrams:


JUSTECB	Subject
AVRELABI	Variable
NAOTEUQI	Equation

STARTER- MYSTERY NUMBER

https://www.transum.org/Software/SW/Starter_of_the_day/starter_June30.ASP

MYSTERY NUMBERS

If 90 D in a RA stands for 90 degrees in a right angle, what do the following stand for?



- 180 D in a T
- 7 D in a W
- 10MM in a CM
- 7 is the SR of FN
- 3 F in a Y
- 366 D in a LY
- SW and the 7 D

PLENARIES

Summarise what you have learnt today in 3 sentences

Plenary: Exit Card

3 things you have learnt today
5 key words
1 question to test you@peers



MENSURATION

- 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.
- Carry out calculations involving the areas and volumes of compound shapes.

ASSESSMENT 2: MENSURATION

STARTERS

https://www.transum.org/Software/SW/Starter_of_the_day/starter_March8.ASP

Upside Number

Fiona noticed that her phone number read the same when viewed upside down.
Her number begins 08 and was followed by seven digits.
The two digit number formed by the fifth and sixth digits is divisible by eleven.

08 1 2 3 4 5 6 7 8

The two digit number formed by the fourth and fifth digits is divisible by 10. The two digit number formed by the sixth and seventh digits is a square number.

What is Fiona's phone number?

https://www.transum.org/Software/SW/Starter_of_the_day/starter_December28.ASP

LETTER CLUE CALCULATIONS

1. Write down a calculation involving single digit numbers.
2. Write the numbers in the calculation in words.
3. Choose just one letter from each of your words and give this clue to a friend.
Can your friend work out what your calculation was?

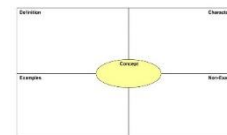
For Example:
 $2 + 3 = 5$
Two + Three = Five
 $W + E = V$

Here are some "Letter-Clue Calculations" for you to solve:

1. O + T = I 2. E - R = U 3. T x N = Q 4. T + H = N

PLENARIES

Fayer Model



EXIT TICKET

Today in class, we learned _____

_____ and it was important to me because _____

I was interested in what we learned today:



I understood what we were doing today:



I completed all of my work in class today:



TERM TWO

Main topic, skills and content:

GEOMETRY:

Circle Theorem

- Calculate the unknown angles using angles formed with parallel lines
- Calculate the unknown angle using the Property-Angle in a semicircle
- 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 drawn 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

TRIGONOMETRY

- 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

ASSESSMENT 1: CIRCLE THEOREM

ASSESSMENT 2: TRIGONOMETRY

STARTERS

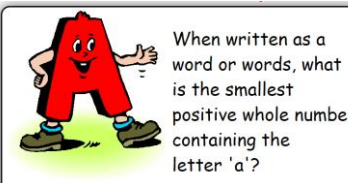
https://www.transum.org/Software/SW/Starter_of_the_day/starter_October19.ASP



Today's Starter is to think of some of the mathematical words which can be made by using the letters in the name of your school.

Teacher: to get started type in the name of your school in the space below. It will need to be the long name of the school rather than the short, abbreviated version as the latter will probably not contain enough letters for this activity.

https://www.transum.org/Software/SW/Starter_of_the_day/starter_October7.ASP



PLENARY – QUIZ MAKING

Plenary

Write three quiz questions to test your peers on what you have learnt today! Make sure you know the answer



Plenary - What did you learn this lesson?

- 3 facts
- 3 key words
- 1 question to test your peers



STARTERS

https://www.transum.org/Software/SW/Starter_of_the_day/starter_July8.ASP

- Know that the perpendicular distance from a point to a line is the shortest distance to the line.
- Solve simple trigonometrical problems in three dimensions including angle between a line and a plane.
- Interpret and use three-figure bearings.
- Recognize, Sketch and interpret graphs of simple trigonometric functions.
- Solve trigonometric equations for values between 0° and 360°

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.

Aunt Sophie's Post Office

A Maths Starter of The Day

Aunt Sophie has 3p and 8p stamps only.

It will cost 73p to post a parcel.

How many of each type of stamp should she put on the parcel?



https://www.transum.org/Software/SW/Starter_of_the_day/starter_May18.ASP

Ms Tayke

A Maths Starter of The Day From Transum

Nineteen again?
Happy Birthday Ms Tayke!



Ms Tayke does not want anyone to know how old she is. We think she is 382 but she often subtracts 19 from her age to make her feel younger.

How many times can you subtract 19 from 382?

Time left 3 : 28.

No calculators allowed.

PLENARY –POEM WRITING

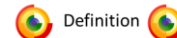


You're Bard!



Write a poem, 5 lines long and that rhymes, summing up what you have learnt today.

PLENARY –DEFINITION WRITING



Definition

Choose three new words you have learnt today or in the last few lessons and write dictionary definitions.

Develop by then asking students to write a paragraph for each of the words (or one using all three at once).



STARTERS

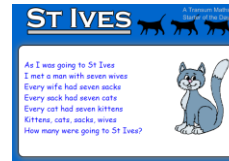
➤ Calculate distance travelled as area under a speed-time graph.

EXAMPLE
DITDIONA can be rearranged to make ADDITION

STARTER
Work out the following Mathematical anagrams:

- DEEPS Speed
- RATGIEND Gradient
- VEERAAG Average

https://www.transum.org/Software/SW/Starter_of_the_day/starter_February4.ASP



PLENARY-Poster campaign

Design a poster advertising the lesson/your learning.

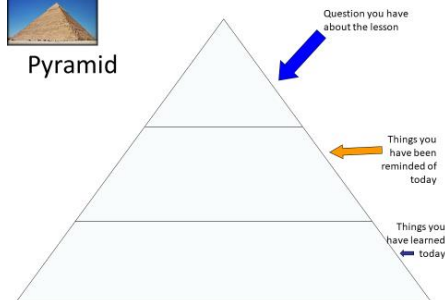
Develop by setting word limits i.e. no more than 7 words



PLENARY-Pyramid



Pyramid



TERM THREE

Main topic, skills and content:

SET THEORY


- Use language, notation and Venn diagrams to describe sets and represent relationships between sets.
- Use Venn diagrams to solve logical problems.

ASSESSMENT 1: SET THEORY

STARTERS

https://www.transum.org/Software/SW/Starter_of_the_day/starter_January22.ASP

Light Shopping



A lamp and a bulb together cost £32.
The lamp costs £30 more than the bulb.
How much does the bulb cost?

Figur471v3ly 5p34k1ng

Write the following numbers using digits:

Four thousand and twenty one.

Nineteen thousand, five hundred and sixteen.

Five million, nine hundred and sixty two thousand, five hundred and thirteen.

One million, two hundred and thirty seven thousand, three hundred and ninety.

Seven million, four hundred and sixty two thousand, nine hundred and thirty.

https://www.transum.org/Software/SW/Starter_of_the_day/starter_January17.ASP

PLENARIES



Targets



What three things have you done well this lesson?

What can you improve next lesson?

How will you do this?



Skills skills skills



What skills have you developed today in SECRET?
Choose one and explain how you have developed it...



FUNCTIONS

- Use function notation to describe simple functions. [e.g. $f(x) = 3x - 5$, $f: x \rightarrow 3x - 5$]
- Form composite functions as defined by $gf(x) = g(f(x))$.
- Find inverse functions $f^{-1}(x)$.

DIFFERENTIATION

- 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.

STARTERS

For Thought
Do the four calculations in the thought clouds then add your answers together.

- 335 young people are going on a day trip. Each bus will take up to 35 people. How many buses are needed?
- Today Sassy spent £37 and yesterday she spent £37. What is the difference between 37 and 37?
- 24 dancers raise £50 each at a sponsored dance. How much money was raised all together?
- If Sissy weighs 96 pounds, Sassy weighs 99 pounds and Eves weighs 96 pounds. What is their combined weight?

https://www.transum.org/Software/SW/Starter_of_the_day/starter_November23.ASP

Simultaneous Occasions

Daniel bought 8 pineapples and 2 peppers which altogether cost £36.
On another occasion he bought 7 pineapples and 6 peppers which cost £40.
Assume the cost of pineapples and peppers stays the same. How much does one pineapple cost? How much does one pepper cost?
Hint: The answers are whole numbers.

https://www.transum.org/Software/SW/Starter_of_the_day/starter_June5.ASP

PLENARIES

5-5-1 Deluxe! Now reduce that to 5 key words...

Write 5 sentences summarising today's topic...

And finally to one word.

Use shapes and pictures to deliver-ly 5-5-1.

Circle Time

- Use circle time to:
- Review
 - Reflect
 - Explore the learning
 - Explore questions
 - Relate feelings to the lesson/learning

