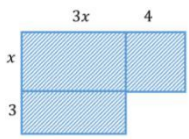


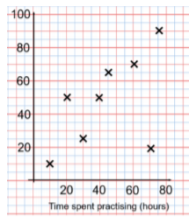
Types of Graph: Rates of Change

- Plot and interpret...
- Cubic
- Reciprocal
- Graph transformations



Quadratics:

- Recap all quadratics so far
- Complete the square and understand graphically
- Solve problems in context
- Quadratic Inequalities [H]



Statistics:

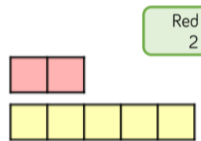
- Frequency polygons
- Scatter graphs
- Time series



$6y + 2x = 26$

Simultaneous Equations:

- Solve graphically, linearly and with one quadratic.
- Solve problems including fractions negatives and decimals



Ratio:

- Understand as a fraction
- Simplify
- Combine
- Divide into a ratio
- Solve complex ratio problems

Construction and Scale

Drawing:

- Construct triangles
- Use scale factors, diagrams and maps.

Area and Perimeter:

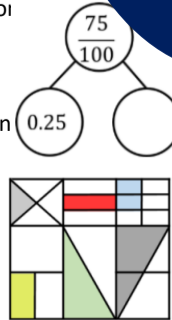
- Composite shapes
- Trapezium
- Circles
- Sectors
- To include algebra, decimals and fractions.

Algebra:

- Understand terminology and notation
- Substitution
- Simplify and manipulate (including area and perimeter)
- Solve simple linear equations
- All of the above including decimals, fractions and negatives

Fractions:

- Understand fractions including using diagrams
- Simplify fractions, Equivalent fractions leading to dividing a decimal by a decimal
- Compare and order fractions
- Mixed numbers and improper fractions
- Convert between fractions and decimals associating a fraction with division to convert any fraction to a decimal
- Lowest Common Multiple
- Add and subtract any fraction
- Find a fraction of an amount
- Find the whole given a fraction of an amount
- Find a fractional increase and decrease

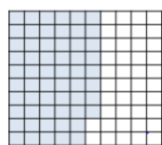
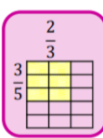


Geometry:

- Understand points, lines, parallel and perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric.
- Properties of triangles, quadrilaterals and circles

Inequalities:

- Represented on a number line
- Understand set notation
- Solve linear inequalities

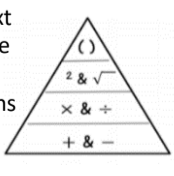


Algebra (Sequences):

- Recognise and use triangular, square, cube, Fibonacci and geometric sequences
- Understand arithmetic sequences and find the nth term
- All of the above with pictorial representation, fractions, decimals and negatives.

Negative Numbers:

- In a real life context
- Order and compare
- +, -, x, ÷
- Order of Operations
- On a scientific calculator

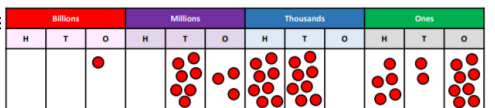


Addition and Subtraction:

- Add and subtract integers and decimals of any size
- Real life context such as bank statements
- Using concrete, pictorial and written methods to solve complex addition and subtraction problems (bar modelling, part whole models, missing box problems)
- Perimeter

Place Value:

- Understand integers and decimals of any size
- Order positives, negatives and decimals
- Round and estimate



YEAR 11

Integrate Knowledge Into Larger Concepts

AQA 8300

(All 1 hr 30mins)

PAPER 1 (33%): Non-Calc

PAPER 2 (33%): Calculator

PAPER 3 (33%): Calculator

TUXFORD ACADEMY

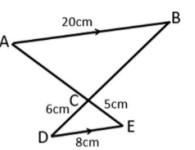
KS3&KS4 HIGHER TIER MATHS

LEARNING JOURNEY



Similar Shapes:

- Find scale factors and missing lengths
- Solve problems involving length, area and volume



Sequences

[incl. Quadratic [H]]

Iteration [H]

YEAR 10

Complex Probability Problems

Volume and Surface Area:

- Sphere
- Cone
- Pyramid
- Frustum



Vectors

$\begin{pmatrix} -3 \\ 2 \end{pmatrix}$



Trigonometry & Pythag:

- Sine rule, cosine rule and area of a triangle

Compound interest, growth and decay.



	1	2	3	4	5	6
R	1R					
G		2G				
B						
Y						6Y

Pythagoras and Trigonometry:

- Apply Pythagoras's theorem to find missing lengths
- Apply trigonometric ratios to find missing lengths and angles
- Solve problems with the above including angle rules & area.
- All the above in 3D
- Trigonometric graphs
- Exact trigonometric values

$\sin 90^\circ =$

$\tan 45^\circ$

Quadratics:

- Draw quadratic graphs and find approximate solutions
- Factorise and solve quadratics
- Difference of two squares
- Sketch linear and quadratic functions
- Solve quadratics using the quadratic formula
- Simplify and manipulate expressions involving algebraic fractions

$x^2 + 4x - 5 > 0$



$x^2 + 3x + 2 \equiv (x + 1)(x + 2)$

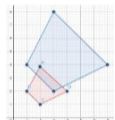
Direct and Inverse Proportion:

- Recap ratio and proportion so far.
- Understand in a real life context
- Form and solve equations
- Understand graphically
- Solve challenging problems

$h \propto \frac{1}{t}$

Transformations:

- Reflection, rotation, translation, enlargement (including fractional and negative scale factors)



Ratio & proportion – recap:

- Understand the relationship between ratio and fractions
- Combining ratios to find a:b:c given a:b and b:c
- Given information about one part, find the whole, other part(s) or difference.

Surds and Indices [H]:

- Recap indices so far
- Apply to negative and fractional indices
- Solve equations using indices
 - Simplify surds
- Calculate exactly with surds
 - Rationalise the denominator
- All of the above with algebra

Standard Form:

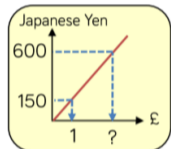
- Understand and convert into standard form
- Calculations

4.5×10^{-3}

YEAR 9

Statistics:

- Understand the data handling cycle and types of data
- Collect, organise and interpret data
- Tally charts, frequency tables, two-way tables, pictograms, bar charts, line graphs and pie charts
- Averages, including grouped data



Bearings:

- Solve problems including angles in parallel lines



Units, measures and conversions:

- Convert between different metric units for length, area and volume.
- Compound units: Speed, density, pressure (in numerical and algebraic contexts)
- Interpreting real life tables (e.g. timetables, distance tables)

3D Shapes:

- Properties and names
- Volume and Surface area (prisms)
- Plans and elevations



Algebra:

- Substitute into scientific formulae
- Expand up to three brackets
- Laws of indices
- Solve more complex equations including fractions, decimals and negatives
- Rearrange scientific formulae

Fractions:

- Multiply and divide proper and improper fractions
- Above with negatives, algebra and order of operations

$\frac{1}{2}$	$\frac{1}{2}$
$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{3}$	$\frac{1}{3}$

YEAR 8

Angles:

- Use of a protractor
- Angle rules for a line, triangle full turn, parallel lines and polygons
- Form and solve equations for all of the above



YEAR 7