

Maths Year 7 Learning Journey

Year 7



Number Skills

Students develop and progress their skills in multiples and factors, BIDMAS, Place value and rounding, multiplying and dividing and negative numbers

Expressions, functions and formulae

Students build on their number skills and start to learn how to simplify expressions, use function machines and substitute into expressions.

Decimals

Students develop their skills and start to solve complex problems with multiplication and division of decimals, equivalent fractions and decimals and learn to solve problems using estimation.

Fractions and Ratio

Students recap their primary knowledge of fractions, in preparation for other units including probability in year 8. They also build on their simple knowledge of writing a ratio and start to solve simple ratio problems

Angles and Shapes

Students build on their primary school knowledge and learn to solve complex problems with angles in a triangle, angles in a polygon, and perpendicular and parallel lines. This includes links with algebra.

Equations

Students continue to build on their algebraic knowledge when they learn how to solve and form equations including from real life scenarios

Perimeter Area and Volume

Students build on and develop their knowledge of units, perimeter, area and volume, and start to solve multi step real life problems. They expand their primary volume of a cuboid knowledge to other prisms, giving them a better conceptual understanding.

Percentages

Students build on their primary knowledge of calculating simple percentages of amounts when they look at percentage increase and decrease, writing one number as a percentage of another and multi stage real life problems

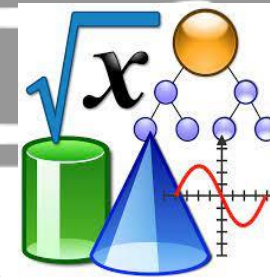
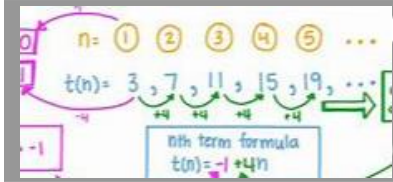
Sequencing and Graphs

Students begin to develop knowledge of number patterns, spotting the rule in a sequence, and calculating and using an nth term rule.

Analysing and Displaying Data

Students build on their primary knowledge of calculating the mean and go on to look at other averages such as the mode and median. They then use this knowledge when working with stem and leaf diagrams, frequency polygons and scatter graphs

Year 8

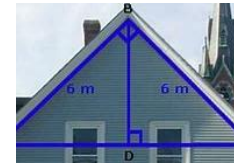


Maths Year 8 Learning Journey

Year 8

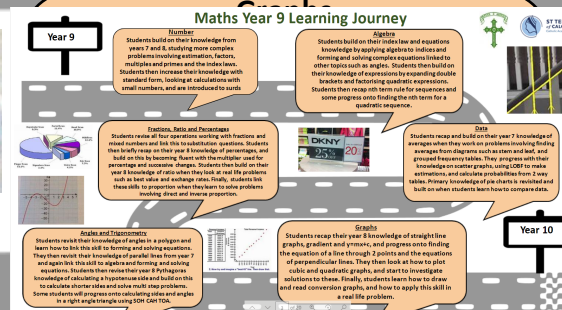
Multiplicative Reasoning
Students continue to build on their knowledge of ratio and units and start to solve more complex problems involving ratio and proportion

Factors and Powers
Students start to investigate squares, cubes and roots and are introduced to calculations with large numbers in standard form



Algebra
Students continue to build their knowledge of expressions and solving equations and start to interleave this knowledge with the laws of indices and inequalities

Probability
Students use their fluency of fractions to start to solve problems using probability. They study the probability scale, how to write a probability as a fraction, how to list outcomes systematically and start to investigate relative frequency and mutually exclusive events.



Transformations
Students build on their primary knowledge of reflection and translation and learn to solve problems with all 4 transformations. They also study similar shapes and scale factors and are introduced to basic vector concepts



2D Shapes and 3D Solids
Students build on their year 7 knowledge of perimeter area and volume, and start to learn how to find the area and circumference of a circle, the volume of a cylinder, and start to investigate Pythagoras' Theorem

Construction and Loci
Students build on their primary knowledge of using a ruler and protractor to draw and measure line segments and angles and start to learn how to use a compass to construct line and angle bisectors. They then start to solve simple loci problems and are introduced to bearings

Real Life Graphs
Students build on their primary knowledge of interpreting line graphs and start to solve problems with distance time graphs, and learn how to interpret gradient in real life graph problems

Year 9

Maths Year 9 Learning Journey



Year 9

Number

Students build on their knowledge from years 7 and 8, studying more complex problems involving estimation, factors, multiples and primes and the index laws. Students then increase their knowledge with standard form, looking at calculations with small numbers, and are introduced to surds

Algebra

Students build on their index law and equations knowledge by applying algebra to indices and forming and solving complex equations linked to other topics such as angles. Students then build on their knowledge of expressions by expanding double brackets and factorising quadratic expressions. Students then recap nth term rule for sequences and some progress onto finding the nth term for a quadratic sequence.



Fractions, Ratio and Percentages

Students revise all four operations working with fractions and mixed numbers and link this to substitution questions. Students then briefly recap on their year 8 knowledge of percentages, and build on this by becoming fluent with the multiplier used for percentage and successive changes. Students then build on their year 8 knowledge of ratio when they look at real life problems such as best value and exchange rates. Finally, students link these skills to proportion when they learn to solve problems involving direct and inverse proportion.

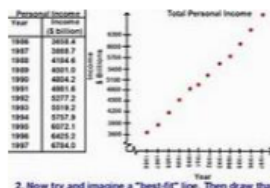


Data

Students recap and build on their year 7 knowledge of averages when they work on problems involving finding averages from diagrams such as stem and leaf, and grouped frequency tables. They progress with their knowledge on scatter graphs, using LOBF to make estimations, and calculate probabilities from 2 way tables. Primary knowledge of pie charts is revisited and built on when students learn how to compare data.

Angles and Trigonometry

Students revisit their knowledge of angles in a polygon and learn how to link this skill to forming and solving equations. They then revisit their knowledge of parallel lines from year 7 and again link this skill to algebra and forming and solving equations. Students then revise their year 8 Pythagoras knowledge of calculating a hypotenuse side and build on this to calculate shorter sides and solve multi step problems. Some students will progress onto calculating sides and angles in a right angle triangle using SOH CAH TOA.



Graphs

Students recap their year 8 knowledge of straight line graphs, gradient and $y=mx+c$, and progress onto finding the equation of a line through 2 points and the equations of perpendicular lines. They then look at how to plot cubic and quadratic graphs, and start to investigate solutions to these. Finally, students learn how to draw and read conversion graphs, and how to apply this skill in a real life problem.

Year 10

