



Subject: Mathematics

Lead Teacher: Mrs C Petford

Year: 8

Curriculum organisation

Students are taught in mixed groups of 30 for **three** hours per week. They are not grouped by ability.

Overview of Topics & Key Information

How will your child be learning?

| Term | Unit(s) of Work | Key Enquiry Questions | Key Content/ Terminology | Skills developed | How will your child be learning? |
|-------------|---|---|--|--|--|
| Autumn Term | <ul style="list-style-type: none"> Sequences Equations, expressions and formulae Percentages Working with 2D shapes Circles Pythagoras' Theorem Multiplicative reasoning Ratio and proportion | <ul style="list-style-type: none"> How does the nth term of a linear sequence relate to the terms of the sequence? What are the differences between arithmetic, geometric and Fibonacci-type sequences? How many different ways can you manipulate an expression? Can you form an equation for this problem and can you solve it? What are the similarities and differences between an inequality, an equation and an expression? How can you check your answer to an equation? Expand $(x+1)(x-3)$ Rearrange the formula for area of a circle to make r the subject How can you use multipliers to increase an amount by a percentage? What do you notice when you increase an amount by 20% then decrease this by 20%? How can you link the area and circumference of a circle? What is Pythagoras' Theorem and when can you use it? How can you compare different 2D and 3D shapes? How do you split an amount in a ratio? Which of these is the best buy? | <ul style="list-style-type: none"> Arithmetic sequences, other types of sequences Working with letter symbols, Expanding Brackets, Factorising Expressions, Rearranging Formulas, Solving Equations including unknowns on both sides and brackets, Index Laws, Expanding Brackets Working with Percentages, Multipliers and reverse Percentages Properties of Quadrilaterals, Area & Perimeter Circumference and Area of Circle Pythagoras' Theorem Percentage Increase and Decrease, Percentage Change Ratio and proportion, Conversion Graphs, Best Buys Working with Ratios, Direct Proportion and Inverse Proportion, | <ul style="list-style-type: none"> Finding missing terms of sequence, finding the nth term of an arithmetic sequence, recognise the difference between arithmetic, geometric and Fibonacci-type sequences Simplifying, expanding and factorising expressions, Number machines, Rearranging formulas, Solving equations and inequations including unknown on both sides and brackets, Solving equations with fractions, know & apply index laws with algebraic expressions, expand double brackets Calculate percentages of a quantity, percentage increase/decrease, interest, Using multipliers, find the original amount given the amount after a percentage increase/decrease Properties of Quadrilaterals, Area and perimeter of triangles, parallelograms and trapeziums Parts of a Circle, Circumference and Area of Circle Apply Pythagoras' theorem Share a quantity in a given ratio, Direct Proportion, Conversion graphs Equivalent ratios, using directly proportional and inversely proportional relationships and finding formulas | <ul style="list-style-type: none"> Whole class discussion Pair work Problem-solving tasks Independent work Group work Investigations |

| | | | | | |
|-------------|---|---|--|---|--|
| | | <ul style="list-style-type: none"> • Give examples of direct and inverse proportion • Five pipes can fill an empty tank of water in 50 minutes. The tank is empty. How long does it take four pipes to fill it? | | | |
| Spring Term | <ul style="list-style-type: none"> • Properties of 3D shapes • Prisms and cylinders • Using measures • Powers and indices • Fractions • Accuracy • Working with data • Graphs | <ul style="list-style-type: none"> • How many different nets can you draw for each 3D shape? • Which cuboid has the largest volume? Surface area? Does the formula for volume of prism work for cuboids? Does the formula for the volume of a cuboid work for all prisms? • A cyclist rides at a constant speed of 25 km/h. They cycle for 210 minutes. How far has the cyclist ridden? • How do you convert between index notation and numbers? • What is the most efficient way to find the LCM/HCF of two small/large numbers? • Which digits are significant? • $y = mx + c$, what happens with different values of m? c? • What are the features of a quadratic equation/graph? | <ul style="list-style-type: none"> • Properties of 3D shapes, nets, surface area and volume of a cuboid • Volume & Surface Area of Prisms • Speed, Density, Converting between metric units • Working with indices and roots, standard form, factors and multiple • Calculations with mixed numbers and improper fractions • Rounding, Estimating and Accuracy • Frequency tables, Pie charts • Straight-line and Quadratic graphs | <ul style="list-style-type: none"> • Properties and nets of 3D solids, Finding Surface Area and Volume of Cuboids • Find the volume and surface area of a prism, find the volume of cylinder • Know & use $\text{speed} = \text{distance} \div \text{time}$, $\text{density} = \text{mass} \div \text{volume}$, convert between metric units for lengths, areas and volumes • Index Notation including negative, 0 or 1 powers, Roots, Standard form, Factors, multiples & primes, Prime factorisation, HCF and LCM • Equivalent fractions & decimals, Adding, subtracting, multiplying and dividing mixed numbers and improper fractions • Rounding to Significant figures, estimating, upper and lower bounds • Mode, median, mean and range from a table, Using Averages, Constructing and Interpreting pie charts • Find gradient of line, equation of line, plot linear and quadratic graphs | |

| | | | | | |
|--------------------|---|---|--|---|--|
| <p>Summer Term</p> | <ul style="list-style-type: none"> • Real-life graphs • Transformations • Constructions • Trigonometry • Probability | <ul style="list-style-type: none"> • How can you find the speed on a distance/time graph? • Use a single transformation to describe shape A to shape B • How many different triangles can you draw given? • A 1m ruler casts a shadow of 0.8m. What is the height of a tree casting a shadow of 4.2m? Which trigonometric ratio does this relate to? • Two coins are thrown, why isn't the probability of getting HH a third? | <ul style="list-style-type: none"> • Work with Distance-time graphs and other real-life graphs • Translate, Reflect & Rotate, Enlargement • Construct triangles, perpendicular lines & angle bisectors, congruent triangles • Similar Triangles and Right-Angled Trigonometry • Probability of two-events | <ul style="list-style-type: none"> • Draw and interpret distance/time graphs, Draw and interpret other real-life graphs eg, showing growth, tides • Given one point or shape on axes; Translate by a vector, reflect in line, rotate about a point, enlarge about a point by scale factor, including fractional • Construct triangles given 3 lengths or 2 lengths and one angle, construct perpendicular bisector or perpendicular through a point, construct angle bisector • Use scale factor to find missing sides in similar triangles; use sine, cosine and tangent ratios to find missing sides and angles in right-angled triangles • Listing outcomes, using Venn diagrams & Two-way tables to find probabilities | |
|--------------------|---|---|--|---|--|

| Equipment needed for lessons | How will learning and progress be assessed? |
|---|---|
| <ul style="list-style-type: none"> • Standard school stationery (Pencil, Blue/Black Pen, Green Pen, Whiteboard Pen, Rubber, Sharpener, Ruler) • Exercise book • Scientific Calculator • Pair of Compasses • Protractor | <ul style="list-style-type: none"> • End of half term tests • Formal assessment week • Peer and self-assessment • Homework tasks • Retrieval practice activities |
| Extension & Enrichment opportunities | What can you do to support your child? |
| <ul style="list-style-type: none"> • Junior mathematics challenge • Team mathematics competition • KS3 Puzzle and problem-solving lunchtime club | <ul style="list-style-type: none"> • Several websites are very useful that include videos, questions and worked through examples, these are: mymaths.co.uk, corbettmaths.com and drfrostmaths.com • Encourage regular revision |

| Inclusion | Inclusion within Y8 Maths |
|--|---|
| <ul style="list-style-type: none"> • Teachers follow student passports to ensure that the needs of all students with SEND are met. • Work is enlarged to the necessary size for visually impaired students. • Teachers will ensure that classrooms are quiet learning environments where possible and will dim lights to support students with sensory needs. • Students have the use of laptop if they have a SEND need whereby use of a laptop supports them. • Hearing impaired students are supported through use a radio aid and teachers ensure that students can lip read at all times during lessons. • Dyslexic students are encouraged to use coloured overlays when they are required to read long passages. • Use of dyslexic friendly fonts and coloured backgrounds used in PowerPoints/resources. • Students with ADHD are given movement breaks, fidget toys and lessons are ‘chunked’ to aid concentration. • Students are seated according to their needs, students work with the SENDCo to decide upon this. | <ul style="list-style-type: none"> • Equipment is adapted wherever necessary to accommodate the needs of students with SEND • Where necessary, pupils are given frequent one to one tutorials to revisit previous topics and methods taught to support their understanding • Pupils are provided with online resources to help with learning outside of the classroom and homework, such as videos and worked examples • Students have access to spare mathematical equipment to help with organisation |

If you have any questions about this Learning Overview, please contact the named Teacher above.