MATHEMATICS

Cross curricular links
PSHE, history, art, music, social skills, careers, preparation for adulthood, equality and diversity, 9 protected characteristics, British values

Skills
Problem solving, logical thinking, reasoning, patience, reading, writing, speaking, listening, communicating, respect, social skills, team work.

Further study
Functional Skills mathematics, GCSE mathematics, A-level mathematics, traineeship, apprenticeship

Career paths
Teacher, finance, health, engineering, science, information and communication, retail

KS4 YEAR 2

Handling Data
- Introduction
- Charts and data types
- Lists and tables
- Tally and frequency diagrams
- Bar charts
- Surveys
- Displaying results graphically
- Infographics
- Extract and represent data – pictograms, pie charts
- Stem and leaf
- Scatter graphs
- Data handling project
- Consolidation
- POOLS (in-class interventions)

Statistics
- Averages and spread of data
- Range, mean, median, mode
- Probability
- Terminology and probability line
- Write probabilities as fractions, decimals and percentages
- Theoretical and experimental probability
- Exam preparation
- Consolidation
- POOLS (in-class interventions)

Consolidation Projects
- Darts – play darts, calculate scores, construct own dartboard, darts challenges
- Life project – income and expenditure, budgeting, presenting findings
- Sweet treats – 2D and 3D shapes, pop art (Wayne Thiebaud and Claus Oldenburg), design and model of own sweet treat
- Cryptography project – Ceasar cipher, link to WWII, Pigpen / Atbash cipher, Morse code, coordinates, murder mystery task
- Design own bedroom – budgeting, comparing costs, furniture measurements, positional vocabulary, draw plans and elevations

Measure, Shape and Space
- Introduction
- Time in a practical context
- Length in a practical context
- Weight – how much sugar is in drinks and snacks?
- Capacity in a practical context
- Temperature – UK compared to other countries
- 2D and 3D shapes and their properties
- Positional vocabulary
- Plans and nets
- POOLS (in-class interventions)

Fractions, Decimals Percentages and Ratio
- Introduction
- Recognise and order fractions
- Calculate fractional amounts
- Simplify fractions
- Recognise and order decimals
- Calculate with decimals
- Recognise and order percentages
- Calculations with percentages
- Percentages in context
- Fractions, decimal and percentage equivalences
- Ratio – ration notation, simplify, divide a given quantity into two parts
- Ratio and scale
- POOLS (in-class interventions)

Number
- The history of maths – introduction of the number system
- Read and write numbers
- Mathematical symbols
- The four operators
- Checking methods
- Negative numbers
- Patterns and sequences
- Maths and world space week
- Black history month
- Consolidation
- POOLS (in-class interventions)

Consolidation Projects
- Planning a music festival – budgeting, site measurements, money, time
- Research, shop for ingredients and bake cookies – taste test and represent findings graphically
- Maths in sport – long jump, high jump, football, show jumping and dressage
- Plan a trip – dates, costs, travel, temperature, high tide times
- Fold and cut theorem – shape, symmetry, tessellation
- POOLS (in-class interventions)

Handling Data and Statistics
- Introduction
- Extract and represent information in bar charts
- Extract and represent information in pictograms
- Extract and represent information in line graphs
- Extract and represent information in pie charts
- Identify a topic for handling data project
- Collect and present data
- Averages and data spread
- Probability
- Probability investigation
- POOLS (in-class interventions)

Measures
- Introduction
- Money and calculations
- Finances
- Length in a practical context
- Perimeter, area and volume
- Weight in a practical context
- Capacity in a practical context
- Temperature in a practical context
- Time
- Telling the time
- Consolidation
- POOLS (in-class interventions)

KS4 YEAR 1

Shape and Geometry
- Introduction
- 2D shapes and properties
- Position, direction and angles
- Regular and irregular shapes
- Symmetry
- Tessellation
- 3D shapes and properties
- Nets
- Plans and elevations
- Consolidation
- POOLS (in-class interventions)

Statistics and Handling Data
- Introduction
- Probability language
- Probability as a fraction, decimal, percentage
- Construct and interpret bar charts
- Construct and interpret pie charts
- Construct and interpret line graphs
- Data collection and presentation
- Range, mean, median and mode
- POOLS (in-class interventions)

Measure, Weight, Capacity & Temperature
- Introduction
- Measuring length
- Perimeter
- Area
- Volume
- Units of weight
- Use weight
- Capacity and volume
- Millilitres and litres
- Negative numbers
- Temperature
- Temperature around the world
- POOLS (in-class interventions)

Number
- Operators and symbols
- The four operators
- Checking methods
- Negative numbers
- Patterns and sequences
- Factors and multiples
- Special numbers
- Black history month
- Consolidation
- POOLS (in-class interventions)

Fractions, Decimals, Percentages and Ratio
- Introduction
- Calculate fractional amounts
- Fractions in a practical context (music and time)
- Calculate with percentages
- Decimals in a monetary context
- Rounding
- The four operators
- Conversions
- Ratio – ratio notation, simplify, divide a given quantity into two parts
- Ratio and scale
- Consolidation
- POOLS (in-class interventions)

Shape and Space
- Introduction
- 2D shapes and properties
- Angles
- Symmetry
- Tessellation
- 3D shapes and properties
- Nets
- Positional vocabulary, plans and elevations
- Perimeter, area and volume
- Exam preparation
- POOLS (in-class interventions)

KS3 YEAR 3

Time and Money
- Coins and notes
- Estimating and rounding
- The four operators
- Monetary increase and decrease
- Discounts
- Practical – tuck shop
- Telling the time
- 24-hour clock
- Reading and using timetables
- Planning a journey
- Consolidation
- POOLS (in-class interventions)

Fractions, Decimals, Percentages and Ratio
- Introduction
- Fractional amounts
- Equivalent fractions
- Improper and mixed number fractions
- The four operators
- Decimals and conversions
- Percentage amounts
- Equivalences
- Ratio
- Consolidation
- POOLS (in-class interventions)

Number
- Initial assessments
- Reading and writing numbers
- Number bonds
- The four operators
- Inverse calculations
- Positive and negative numbers
- Number patters and sequences
- Consolidation
- POOLS (in-class interventions)

Statistics and Handling Data
- Introduction
- Probability language
- Probability as a fraction, decimal, percentage
- Construct and interpret bar charts
- Construct and interpret pie charts
- Construct and interpret line graphs
- Data collection and presentation
- Range, mean, median and mode
- POOLS (in-class interventions)

Shape and Geometry
- Introduction
- 2D shapes and properties
- Position, direction and angles
- Regular and irregular shapes
- Symmetry
- Tessellation
- 3D shapes and properties
- Nets
- Plans and elevations
- Consolidation
- POOLS (in-class interventions)

Measure, Weight, Capacity & Temperature
- Introduction
- Measuring length
- Perimeter
- Area
- Volume
- Units of weight
- Use weight
- Capacity and volume
- Millilitres and litres
- Negative numbers
- Temperature
- Temperature around the world
- POOLS (in-class interventions)

KS3 YEAR 2

Shape & Geometry
- Introduction
- 2D shapes and properties
- Position, direction and angles
- Regular and irregular shapes
- Symmetry
- Tessellation
- 3D shapes and properties
- Nets
- Plans and elevations
- Consolidation
- POOLS (in-class interventions)

Statistics & Handling Data
- Introduction
- Probability language
- Probability as a fraction, decimal, percentage
- Construct and interpret bar charts
- Construct and interpret pie charts
- Construct and interpret line graphs
- Data collection and presentation
- Range, mean, median and mode
- POOLS (in-class interventions)

Measure, Weight, Capacity & Temperature
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- Use weight
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- Equivalent fractions
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KS3 YEAR 1

Time & Money
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- Estimating and rounding
- The four operators
- Monetary increase and decrease
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Fractions, Decimals, Percentages & Ratio
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- Number bonds
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- Positive and negative numbers
- Number patterns and sequences
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The planning and delivery follows a hierarchical model which builds on core skills to begin with, e.g. the four operators before progression of other skills, as number underpins the rest of maths. These underpinning concepts build firm foundations for the assimilation of new knowledge. The sequential planning is as follows: number, fractions, decimals, percentages, ratio. measure, shape and space and then statistics and handling data.

Building on complexity the deliberate approach to repetitive sequencing via differentiated level shows that one concept relies on prior knowledge, e.g. at bronze a learner is expected to count reliably to 100 and add and subtract two-digit numbers where silver learners are expected to count reliably to 1000 and add and subtract three-digit numbers.

These outcomes are not based on a learner's academic year group, but their individualised starting point and personalised spiral of assessment and progression.