

Subject Curriculum Overview for Academic Year 2022/2023

Subject: Mathematics		Subject Leader: Mr S Card	Stage F	AUTUMN TERM
Topic	Key Learning Points		Key Vocabulary	Assessments
Block 1 - Commutative and associative laws	- Know the associative and commutative laws - Add integers up to 10 000 000 using column method - Add integers and decimals up to 2 d.p. using column method - Introduction of the bar model and how it can be used for subtraction - Subtract integers up to 10 000 000 using column method - Subtract integers and decimals up to 2 d.p. using column method		Associative Commutative Integer	Blocks 1-2 will be assessed before the Autumn half term holiday
Block 2 - Multiples, factors and primes	- Find multiples and common multiples by listing - Find factors and common factors by listing - Know and use the definitions of prime and composite numbers - Find prime factors and write prime factor decomposition of numbers - Calculate the lowest common multiple using prime factors - Calculate the highest common factor using prime factors		Factor Multiple Common Composite Prime Prime factor	
Block3 - Multiplication and division	- Use mental methods for multiplication and division - Multiply numbers up to 10 000 000 by a single digit - Multiply 2-digit numbers by 2- and 3-digit numbers - Divide integers up to 1000 by single digits using long division - Divide integers by 2-digit numbers using long division - Divide with remainders and write answers as mixed numbers		Remainder Product	Blocks 3-5 will be assessed before the Christmas holiday
Block 4 -Fractions	- Understand how fractions can be represented using the bar model - Identify equivalent fractions using common multiples - Simplify fractions using common factors - Compare fractions using common numerators and denominators - Order fractions using common numerators and denominators - Understand how to find a fraction of a quantity using division		Numerator Denominator Equivalent Simplify Ascending/Descending	
Block 5 - Negative numbers	- Extending the number line and moving up and down - Calculate the difference between positive and negative numbers - Add negative numbers to positives or negatives - Subtract negative numbers from positives or negatives - Multiplication and division involving positive and negative numbers - Know and use the order of operations with positive and negative numbers		Negative number Distributive	

Subject Curriculum Overview for Academic Year 2022/2023

Subject: Mathematics		Subject Leader: Mr S Card	Stage F	SPRING TERM
Topic	Key Learning Points		Key Vocabulary	Assessments
Block 6 – Decimals and rounding	- Read, write and count in decimals, adding to number lines - Compare decimals giving explanations - Order decimals up to 4 decimal places - Round decimals to the nearest integer, 1 decimal place and 2 decimal places - Approximate using an informal method - Convert decimals to fractions and vice-versa		Decimal place Approximate Ascending Descending Greater than > Less than <	Blocks 6-8 will be assessed before the Spring half term holiday
Block 7 – Angles	- Use a protractor to draw and measure angles up to 360° - Use the words acute, right, obtuse and reflex when describing angles - Know the angle sum for straight lines and points - Know the angle sum of a triangle and use to find missing angles - Know the angle sum of a quadrilateral and use to find missing angles - Find the missing angle in an isosceles triangle when only one angle is known		Protractor Acute Angle Obtuse Angle Reflex Angle Isosceles Quadrilateral	
Block 8 – Properties of shapes and solids	- Know the definitions of special quadrilaterals - Classify 2D shapes using given categories; e.g. number of sides, symmetry - Know the names of common 3D solids - Use mathematical language to describe 3D solids - Construct and draw accurate 3D solids from given nets - Draw accurate nets for common 3D solids		Equilateral Isosceles Scalene Rhombus Trapezium Parallelogram	
Block 9 – Area	- Understand concept of area and approximate areas of complex shapes - Calculate areas of rectangles - Calculate areas of rectangle composites - Recognise that shapes with the same areas can have different perimeters - Know that the area of a triangle is given by $\text{area} = \frac{1}{2} \times \text{base} \times \text{height}$ - Calculate the areas of more complex triangles including composites		Compound/Composite Area Perimeter Boundary Perpendicular Estimate/Approximate	Blocks 9-10 will be assessed before the Easter holiday
Block 10 – Proportional reasoning	- Solve comparison problems using multiplication, division or both. - Use the value of a single item to solve a comparison problem - Write ratios to compare two or more measurements - Simplify ratios using common factors - Using ratios to find missing quantities - Divide a quantity in two parts in a given ratio		Direct proportion Comparing Ratio Unitary	

Subject Curriculum Overview for Academic Year 2022/2023

Subject: Mathematics		Subject Leader: Mr S Card	Stage F	SUMMER TERM
Topic	Key Learning Points		Key Vocabulary	Assessments
Block 11 – Fractions and percentages	- Understand that a percentage represent a fraction of 100 - Convert fractions to percentages and vice-versa - Calculate fractions of amounts - Use fraction equivalents to find a percentage of an amount - Use non-calculator methods to find a percentage of an amount - Increase and decrease quantities by a percentage		Convert Fraction of amount Percent Percentage increase Percentage decrease	Blocks 11-12 will be assessed before the Summer half term holiday
Block 12 – Measurements	- Read scales going up in different increments - Estimate and measure using metric measurements for length - Estimate and measure using metric measurements for weight - Estimate and measure using metric measurements for capacity - Know common key metric conversions and convert between metric units of length, weight and capacity - Solve problems involving lengths, weight and capacity		Scale Capacity Conversion Length Weight Metric	
Block 13 -Squares, cubes, roots and order of operations	- Identify square numbers and understand associated notation - Identify triangular numbers and their links to square - Identify cube numbers and understand notation - Understand the meaning of square roots and cube roots and links with squares and cubes - Use trial and error/improvement to estimate square roots - Use order of operations for + - x ÷ () squares, cubes and roots		Square number Cube number Square root Cube root Triangular number Operator / Operation	Assessment based on previous knowledge and new learning from current curriculum year
Block 14 – Averages and data	- Understand the mean as a measure of typicality - Know how to calculate the mean of a set of data - Use the mean to find a missing number in a set of data - Understand that pie charts show proportions and calculate frequencies from their angles - Use a table of frequencies to work out angles and draw pie charts - Use scaling when constructing line graphs - Answer two-step questions about data in line		Mean Mode Median Average Data Frequency	

Subject Curriculum Overview for Academic Year 2022/2023

How parents can support learning in the subject this academic year

At the beginning of each new block of work, students will stick a **Knowledge Checklist** into their orange book. This contains a list of the learning objectives for the block (given above), key vocabulary which has been carefully defined and important facts that the students need to know. Helping students to learn the vocabulary and key knowledge will be hugely beneficial to their progress. The objectives are referenced to a Mathswatch video clip which will explain the work, give examples and practise questions. These can be used for pre-learning to gain an insight into what is coming up, consolidation of understanding or catching up on work missed.

Practice is important so please encourage students to complete homework on a weekly basis, suggest they attend Maths Club (Monday after school) which allows them to work on any aspect of their maths with support from several teachers or develop their interest in other areas of maths. Talking and using maths at home is a great way to link maths to everyday situations, for instance scaling up or down ingredients for a recipe, discussing time or money, estimating costs, looking at best value products in the supermarket, converting between units of measure etc.

Due to the hierarchical structure of Mathematics, it is vital that students catch up on any work missed through absences. If a student is absent they are expected to use their Knowledge Checklist to locate a video clip which will explain the work. Students should copy down the examples and work through the questions given. When they return they will need to copy up the missed notes from another student. If they need support with the work then please encourage them to attend Maths Club where staff will be there to help and support.

Recommended Reading

Murderous Maths Series – Poskitt Kjartan
Look into my eyes (Ruby Redfort) – Lauren Child
The number devil: A Mathematical adventure – Hans Magnus Enzensberger
Alex's adventures in Numberland – Alex Bellos
Can you solve my problems? – Alex Bellos
Math with bad drawings: Illuminating the ideas that shape our reality – Ben Orlin

Points to note

Students are expected to bring a scientific calculator to every maths lesson. The model we currently recommend is the Casio Classwiz FX-83GTX-S. This calculator can be purchased through the school via parentpay.