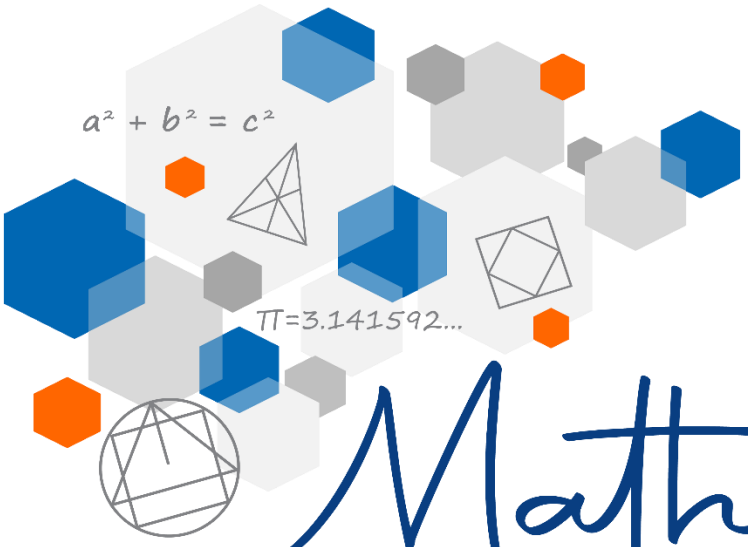
Ashby School
Empowered to Learn

Curriculum Information

Key Stage 3



Maths Faculty

"Developing confident problem solvers who understand mathematical structures of the world around us"

For yourself & for others

LIFE
Inspiration Innovation Integrity

Ashby School
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Curriculum Intent

Mathematics is the key to understanding the logic of the world in which we live. At Ashby School, we believe that every student is capable of grasping these logical structures and excelling in mathematics. Taught by our expert staff, students gain fluency in mathematical methods, develop conceptual understanding, and learn to apply problem-solving strategies. Staff manage the pace of lessons to ensure it is matched to the needs of students. In our teaching, we are keen to highlight the connections between different areas of mathematics to build strong foundations for future success.

Key Stage 3 Maths

Our Key Stage 3 curriculum has been designed following the guidelines and framework set out by the NCETM (National Centre for Excellence in the Teaching of Mathematics). We have used this guidance to create a rigorous, coherent and connected Key Stage 3 mathematics curriculum.

As outline in the National curriculum for mathematics 'Mathematics is an interconnected subject in which students need to be able to move fluently between representations of mathematical ideas. The programme of study for Key Stage 3 is organised into apparently distinct domains, but students should build on Key Stage 2 and connections across mathematical ideas to develop fluency, mathematical reasoning, and competence in solving increasingly sophisticated problems.'

Our curriculum emphasises teaching for mastery, this rejects superficial short-term coverage in favour of developing deep, connected understanding of key ideas. This forms a secure foundation for future learning, so making more efficient use of teaching and learning time

Year and Half term	Themes	Knowledge and skills
7 HT1 & HT2	• Place value	By the end of this module, students should …. • Understand place value in integers • Understand place value in decimals, including headings in fractional, exponent and word format. • Be able to multiply and divide by powers of 10. • Understand place value in the context of measure. • Order and compare numbers using $<, >, =, \neq$
	• Properties of number	By the end of this module, students should …. • Understand multiples • Understand integer exponents and roots • Understand and use the unique prime factorisation of a number

Year and Half term	Themes	Knowledge and skills
7 HT3 & HT4	• Arithmetic Procedures with integers and decimals	By the end of this module, students should …. • Understand the mathematical structures that underpin addition & subtraction of positive and negative integers. • Generalise and fluently use written addition and subtraction strategies, including columnar formats, with decimals. • Understand the mathematical structures that underpin multiplication & division of positive and negative integers. • Generalise and fluently use written multiplication and division strategies to calculate accurately with decimals. • Use the laws and conventions of arithmetic to calculate efficiently. • Use the commutative, associative and distributive laws to flexibly and efficiently solve problems.
	• Expressions and equations	By the end of this module, students should …. • Understand and use the conventions and vocabulary of algebra, including forming and interpreting algebraic expressions and equations • Understand that a letter can be used to represent a generalised number • Understand that algebraic notation follows particular conventions and that following these aids clear communication • Know the meaning of and identify: term, coefficient, factor, product, expression, formula and equation • Understand and recognise that a letter can used to represent a specific unknown value or a variable • Understand that relationships can be generalised using algebraic statements • Understand that substituting particular values into a generalised algebraic statement gives a sense of how the value of the expression changes. • Simplify algebraic expressions by collecting like terms to maintain equivalence. • Manipulate algebraic expressions using the distributive law to maintain equivalence

Year and Half term	Themes	Knowledge and skills
7 HT5 & HT6	• Plotting co-ordinates	By the end of this module, students should …. • Describe and plot coordinates, including non-integer values, in all four quadrants • Solve a range of problems involving coordinates • Know that a set of coordinates, constructed according to a mathematical rule, can be represented algebraically and graphically* • Understand that a graphical representation shows all of the points (within a range) that satisfy a relationship
	• Perimeter and area	By the end of this module, students should … • Understand the concept of perimeter and use it in a range of problem-solving situations • Use the properties of a range of polygons to deduce their perimeters • Understand the concept of area and use it in a range of problem-solving situations • Understand that the areas of composite shapes can be found in different ways • Derive and use the formula for the area of a trapezium*
	• Arithmetic Procedures including fractions	By the end of this module, students should …. • Work interchangeably with terminating decimals and their corresponding fractions • Understand that a fraction represents a division and that performing that division results in an equivalent decimal • Understand the process of simplifying fractions through dividing both numerator and denominator by common factors • Compare and order positive and negative integers, decimals and fractions • Understand the mathematical structures that underpin the multiplication and division of fractions • Know, understand and use fluently a range of calculation strategies for addition, subtraction, multiplication and division of fractions

Year and Half term	Themes	Knowledge and skills
8 HT1 & HT2	• Understanding multiplicative relationships	By the end of this module, students should …. • Understand the concept of multiplicative relationships • Understand that multiplicative relationships can be represented in a number of ways and connect and move between those different representations • Understand that fractions are an example of a multiplicative relationship and apply this understanding to a range of contexts • Understand that ratios are an example of a multiplicative relationship and apply this understanding to a range of contexts • Understand the language and notation of ratio and use a ratio table to represent a multiplicative relationship and connect to other known representations
	• Transformations	By the end of this module, students should …. • Understand and use translations • Understand and use rotations • Understand and use reflections • Understand and use enlargements
	• Estimation and Rounding	By the end of this module, students should …. • Round numbers to a required number of decimal places • Round numbers to a required number of significant figures • Estimate calculations by rounding

Year and Half term	Themes	Knowledge and skills
8 HT3 & HT4	• Sequences	By the end of this module, students should …. • Understand the features of a sequence • Recognise and describe arithmetic sequences
	• Graphical representations of linear relationships	By the end of this module, students should …. • Connect coordinates, equations and graphs • Explore Linear Relationships
	• Solving Linear Equations	By the end of this module, students should …. • Understand what is meant by finding a solution to a linear equation with one unknown • Solve a linear equation with a single unknown on one side where obtaining the solution requires one step • Solve a linear equation with a single unknown where obtaining the solution requires two or more steps (no brackets) • Solve efficiently a linear equation with a single unknown involving brackets

Year and Half term	Themes	Knowledge and skills
8 HT5 & HT6	• Understanding multiplicative relationships: percentages and proportionality	By the end of this module, students should …. • Understand that multiplicative relationships can be represented in a number of ways and connect and move between those different representations • Understand that percentages are an example of a multiplicative relationship and apply this understanding to a range of contexts • Understand proportionality
	• Statistical representations, measures and analysis	By the end of this module, students should …. • Understand and calculate accurately measures of central tendency and spread • Construct accurately statistical representations • Interpret reasonably statistical measures and representations • Choose appropriately statistical measures and representations
	• Perimeter, Area and Volume	By the end of this module, students should …. • Understand the concept of perimeter and use it in a range of problem-solving situations • Understand the concept of area and use it in a range of problem-solving situations • Understand the concept of volume and use it in a range of problem-solving situations

Year and Half term	Themes	Knowledge and skills
9 HT1 & HT2	• Geometrical properties (polygons)	By the end of this module, students should …. • Understand and use angle properties
	• Constructions	By the end of this module, students should …. • Use the properties of a circle in constructions • Use the properties of a rhombus in constructions
	• Geometrical properties (similarity and Pythagoras)	By the end of this module, students should …. • Understand and use similarity and congruence • Understand and use Pythagoras' theorem

Year and Half term	Themes	Knowledge and skills
9 HT3 & HT4	• Probability	By the end of this module, students should …. • Explore, describe and analyse the frequency of outcomes in a range of situations • Systematically record outcomes to find theoretical probabilities • Calculate and use probabilities of single and combined events
	• Non-Linear relationships	By the end of this module, students should …. • Recognise and describe other types of sequences (non-arithmetic)
	• Expressions and formulae	By the end of this module, students should …. • Find products of binomials • Rearrange formulae to change the subject

Year and Half term	Themes	Knowledge and skills
9 HT5 & HT6	• Trigonometry	By the end of this module, students should …. • Understand the trigonometric functions • Use trigonometry to solve problems in a range of contexts • Understand that the trigonometric functions are derived from measurements within a unit circle • Know how the sine, cosine and tangent ratios are derived from the sides of a right-angled triangle
	• Standard Form	By the end of this module, students should …. • Interpret and compare numbers in standard form $A \times 10^n$, $1 \leq A < 10$
	• Graphical Representations	By the end of this module, students should …. • Model and interpret a range of situations graphically • Model real-life situations graphically