

## CURRICULUM SUBJECT: MATHS

### SUBJECT CONTACT: ALICE WARD

“Go down deep enough into anything and you will find mathematics.”– Dean Schlicter

### CURRICULUM INTENT

The Maths department believes in progress for all, regardless of ability. We want to develop a passion for Maths in our students, with our most able continuing to study mathematics beyond GCSE. We teach for knowledge and depth of understanding across all topics.

Why is it important that pupils at Vale of York study Maths?

*Studying mathematics provides students with far-reaching benefits beyond knowledge acquisition. It cultivates critical thinking skills, problem-solving abilities, quantitative literacy, and real-world applications, opening doors to diverse career opportunities. By embracing mathematics education, students gain valuable skills and insights that serve them well throughout their lives.*

*Mathematics forms the foundation of education and literacy across various fields.*

*In York, as in any community, mathematics education is essential for individuals to succeed in school, college, and beyond. Understanding mathematical concepts enables individuals to make informed decisions, solve problems, and engage with various aspects of life effectively.*

*York is very fortunate to be a leading city in the UK for STEM, being home to York Science Park, Science City York, the National STEM Centre, and the National Science Learning Centre. This provides an abundance of additional opportunities for pupils with an active interest in this area of the curriculum.*

## CURRICULUM STATEMENT

At KS3: Using the White Rose Scheme of Learning as a guideline, the KS3 curriculum is designed and intended to develop a greater depth of understanding of mathematical topics in students before they reach KS4. Mastery pedagogy and teaching techniques will be present in the KS3 classroom to help students learn topics to a greater depth with physical and pictorial representations to help students understand concepts, moving onto abstract methods when pupils have a full theoretical understanding for a mathematical concept. At Vale of York Academy students will develop skills in critical thinking, problem solving, numeracy, persistence and resilience and logical reasoning alongside the key subject content taught in KS3 and KS4.

All students will follow the same Scheme Of Learning (SOL) for KS3 that covers the KS3 national curriculum for mathematics.

At KS4: The intention at KS4 is to use the knowledge acquired at KS3 and apply to GCSE questions. Fluency of topics will be rehearsed in lesson starters across both tiers. At KS4 students SOL will reflect the higher or foundation tier. Applying knowledge to problem solving style questions will be an integral part of KS4. Students will be stretched to learn topics not covered in the KS3 curriculum

## CURRICULUM SEQUENCE

Key Stage 3:

	<b>Year 7</b>	<b>Year 8</b>	<b>Year 9</b>
<b>Curriculum time (pw)</b>	<i>7 hours a fortnight</i>	<i>7 hours a fortnight</i>	<i>7 hours a fortnight</i>
<b>Curriculum framework</b>	<i>National Curriculum</i>	<i>National Curriculum</i>	<i>National Curriculum</i>
<b>Core knowledge &amp; understanding covered</b>	<i>Sequences</i> <i>Algebraic notation</i> <i>Equality and equivalence</i> <i>Place value and ordering</i> <i>Integers and decimals fdp equivalence</i> <i>Problem solving with addition and subtraction</i> <i>Directed number</i> <i>Addition and subtraction of fractions</i> <i>Constructing, measuring and using geometric notation</i>	<i>Ratio and scale</i> <i>Multiplicative change</i> <i>Multiplying and Dividing fractions</i> <i>Working in the Cartesian plane</i> <i>Representing data</i> <i>Probability</i> <i>Equations and inequalities</i> <i>Sequences</i> <i>Indices</i>	<i>Straight line graphs</i> <i>Equations and inequalities</i> <i>3D Shapes</i> <i>Constructions and Congruence</i> <i>Using Percentages</i> <i>Maths and money</i> <i>Deduction (angles)</i> <i>Rotation and translation</i> <i>Enlargement and Similarity</i>

	<i>Developing sets and probability</i> <i>Prime numbers</i> <i>Proof geometric reasoning</i>	<i>Fractions and Percentages~</i> <i>Standard form</i> <i>Angles in parallel lines and polygons</i> <i>Area of 2D shapes</i> <i>Line Symmetry</i> <i>Data handling</i> <i>Measures of location</i>	<i>Ratio</i> <i>Rates</i> <i>Probability</i> <i>Algebraic representation</i>
<b>Subject specific skills</b>	<i>Throughout the three years the following skills are integral to a pupils development along side the mastery of core knowledge: Mathematical fluency, mathematical thinking, problem solving, and reasoning.</i>		
<b>Personal attributes evolved that support learning</b>	<i>The subject specific skills develop a mastery of maths. Pupils are supported to:</i> <ul style="list-style-type: none"> <li>● <i>Build independence through the completion of classwork and homework</i></li> <li>● <i>Develop resilience through problem solving and reasoning</i></li> <li>● <i>Evolve innovative and creative approaches to mathematical conundrums</i></li> </ul>		
<b>Disciplinary Literacy</b>	<i>Students need to read, engage and comprehend tasks and mathematical problems. Being able to know and understand what a question is specifically asking you to do is essential in being able to answer it. Within each unit there will be new terminology pupils will have to learn and understand.</i>		

Key Stage 4:

	<b>Year 10</b>	<b>Year 11</b>
<b>Curriculum time (pw)</b>	<i>4 hours per week</i>	<i>4 hours per week</i>
<b>Curriculum framework</b>	<i>Edexcel. Higher or foundation. 3x 90 minute papers worth 80 marks each. 1 non calculator and 2 calculator papers</i>	
<b>Core knowledge &amp; understanding covered</b>	<i>Number</i> <i>Algebra</i> <i>Graphs tables and charts</i> <i>Fractions and Percentages</i> <i>Equations inequalities and sequences</i> <i>Angles</i> <i>Averages</i>	<i>Quadratic equations</i> <i>Perimeter area and volume 2</i> <i>Fractions indices and standard form</i> <i>Congruence, similarity and vectors</i> <i>More algebra</i>  <i>Regular assessment to close gaps in knowledge in the lead up to GCSE exams.</i>

	<p>Perimeter and Area Transformations Ratio Right angled triangles Probability Multiplicative reasoning Constructions of Loci and Bearings</p>	
<b>Subject specific skills</b>	Develop mathematical fluency, Mathematical thinking, problem solving, reasoning. Continually building exam technique through year 10 and 11	
<b>Personal attributes evolved that support learning</b>	<p>Building independence through class work and homework Resilience through problem solving and reasoning Evolve innovative and creative approaches to mathematical conundrums Developing exam practice and technique</p>	

Links to Course specifications:

<https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/specification-and-sample-assesment/gcse-maths-2015-specification.pdf>

## CURRICULUM OPPORTUNITIES

Key stage 3:

	Year 7	Year 8	Year 9
<b>Within the formal curriculum</b>	<p>The maths scheme of learning is built to teach topics that use the same skill set at the same time so that students are able to recognise and use the skills in different contexts. The maths curriculum is cyclic, and skills repeat and get progressively harder over the whole key stage</p>		
<b>Beyond the formal curriculum (out of lesstime)</b>	<p>Pi week is celebrated - activities delivered in form time and optional enrichment activities in unstructured time Tutor time numeracy program in place to embed skills Drop down sessions covering financial literacy spread out through key stage 3 UKMT maths challenge (both junior and intermediate)</p>		

<b>Links to other curriculum areas</b>	<i>'What's in a word' resource used to supplement understanding of key terminology and to improve literacy. Scientific formulae used to enable fluency across Maths and Science. Links to food lessons in ratio and proportion topics.</i>		
<b>Preparation for adult life</b>	<i>Extension on primary prior knowledge to further in-context problems - key topics include intro to financial maths, mental strategies and estimation.</i>	<i>Emphasis on multiplicative reasoning - key topics include conversions (metric / currency), scale diagrams, statistics and data handling.</i>	<i>Emphasis on Financial literacy -key topics include problems with VAT and interest</i>

Key Stage 4:

	Year 10	Year 11
<b>Within the formal curriculum</b>	<i>Building upon knowledge from KS3 students learn to apply skills onto GCSE exam situations.</i>	
<b>Links to other curriculum areas</b>	<i>Links are explored with science, Food technology, geography and psychology within both higher and foundation curriculum</i>	
<b>Preparation for adult life</b>	<i>94% of all employees require some use of mathematics in their jobs. 68% use fractions, decimals and percentages. More than 1/3 of manual workers use basic algebra in their roles. This is reflected in GCSE exam style questions at grades 4-5. Financial Maths is present throughout the ks4 curriculum also. Students will encounter real life in the maths classroom through problem solving situations.</i>	

## CURRICULUM IMPLEMENTATION

As an Academy we have a range of clear standards and expectations of our pupils however each subject area has its own individual practices and habits that ensure that it can function to its optimum.

### Curriculum delivery:

Non calculator and calculator topics are taught alongside each other in the classroom.

All pupils from year 7 are expected to have a scientific calculator with them in every lesson. We recommend a Casio scientific calculator rather than an own brand calculator as they have better functionality allowing pupils to work more efficiently.

### Homework:

What does a parent need to know about your expectations for setting, completing and handing in of HW. Use table if easier

	Frequency	Expected time to complete	Completion notes and handing in	What to do if stuck
7	Once per week	Up to 30 mins	Work set on google classroom. Students should complete in the back of their orange exercise book	Ask a peer for help. If still unable to complete then speak to your class teacher before the day the work is due in
8	Once per week	Up to 30 mins	Work set on google classroom. Students should complete in the back of their orange exercise book	Ask a peer for help. If still unable to complete then speak to your class teacher before the day the work is due in
9	Once per week	Up to 30 mins	Work set on google classroom. Students should complete in the back of their orange exercise book	Ask a peer for help. If still unable to complete then speak to your class teacher before the day the work is due in
10	Once per week	Up to 1hr	Work set on google classroom. Students should complete in the back of their orange exercise book	Ask a peer for help. If still unable to complete then speak to your class teacher before the day the work is due in
11	Once per week	Up to 1 hr	Homework will often be revision based and set on maths watch	Watch the maths watch videos to help

## SUPPORTING YOUR CHILD

	Resources to support your child	Relevance - How it helps
Key Stage 3	<p><i>Maths watch - all pupils have a login from the start of year 7</i>  <i>fullnamesurname@valeofyorkacademy</i>  <i>Password: multiply</i></p>	<p><i>The full KS3 national curriculum is available on Mathswatch to complement the teaching inside the classroom.</i></p>
Exam courses	<p><i>Maths watch (same as above)</i></p> <p><i>Pinpoint learning - pre-existing exams marked and data entered to this website for students to see their consistent strengths and weaknesses. Links to topic areas where improvement is needed.</i></p> <p><i>Students in KS4 will regularly update their pinpoint learning after assessment points in class. This will then inform their personalised revision checklist.</i></p>	<p><i>Students should use pinpoint to create their personalised revision list based on their individual weaknesses. They should then use Mathswatch to help with the revision of these topics</i></p>

KS3 curriculum

<https://whiteroseeducation.com/resources?year=year-7&subject=maths>

KS4 Support for GCSE

<https://www.pearsonschoolsandfecolleges.co.uk/secondary/subjects/mathematics-secondary/support-gcse-schemes-of-work>

**MATHSWATCH** - <https://vle.mathswatch.co.uk/vle/>

Pupil log in

fullnamesurname@valeofyorkacademy

Password: multiply

All pupils can access the full maths curriculum across KS3 and 4

PINPOINT LEARNING - <https://www.pinpointlearning.co.uk/>

Students in Year 11 will log into pinpoint to access their personalised revision list. This will be linked to the relevant mathswatch clips for them to revise

## WIDER INTEREST

UKMT - <https://ukmt.org.uk/>

Organisation who run the Junior and intermediate Maths Challenge

AMSP- <https://amsp.org.uk/>

Wider support for more able mathematicians

PARALLEL CIRCLES - [Welcome to Parallel Circles!](#)

Online community for more able mathematician