

Maths

Intent:

State the overall intent of your curriculum area. This must link to the school curriculum intent.

Context:

State any specific contextual information in this box, for example information about prior learning or community context.

The Big Picture—Intent:

Up till February half term, terms are split into units to ensure content is covered and students spend enough time to get a deep understanding of the topic covered. From February student will follow a bespoke revision timetable based on previous PLC's and exam feed back. Units have an element of interleaving as a key element enabling students to revisit previous work, develop knowledge and understanding and further extend their skills. Number work is emphasized throughout the blocks alongside estimation. Calculator skills have been incorporated throughout the curriculum, thus enabling all students to access the materials presented. Any student will be able to access the work the challenging strands present however in extreme cases where student(s) are having considerable issues alternatives will be put in place alongside the main strand.

**YEAR 11
MATHS**

Content / Units	Skills	Knowledge	Prior—Y10	Next Steps
<ul style="list-style-type: none"> Graphs Algebra Reasoning Communication 	<p>To be able to plot, read and interpret graphs.</p> <p>To be able to form and solve linear and quadratic inequalities, equations and formulas.</p> <p>To be able to assess a problem and work out which mathematical skill to apply.</p> <p>To be able to show detailed, logical workings for mathematical problems.</p>	<p>To know the general equations of different forms of graphs.</p> <p>To know how to solve equations and inequalities.</p> <p>To know how to use and rearrange formulas.</p> <p>To know how to find the nth term of a sequence.</p> <p>To know Pythagoras' Theorem and Trigonometric ratios.</p> <p>To know the difference between direct and inverse proportion.</p> <p>To know how probability works and apply it to a number of different situations.</p>	<p>All content covered during Y10 will be built on in Y11</p>	<p>If students do not gain a grade 4 pass or above they will be required to continue Maths GCSE next year.</p> <p>If students do achieve a grade 4 or above, they have the option to complete a level 3 qualification in Core Maths.</p> <p>If students gain grade 6 or above they have the opportunity to study A level Maths and A level Further Maths</p>

Implementation	Marches Futures Links	Summative Assessment
<p>There will be 4/5 LP units of approx. 3/4 weeks each. Each lesson will involve a WRM flashback task. Independence and study skills will be fostered through: challenging questions and problems, group and pair work, modelling, homework and PLC after each unit and mock assessment. Each unit starts with a student self reflective log which is revisited after each objective has been taught (may be across a few lessons)</p> <p>Lessons will be based around multiple representations; Concrete, Pictorial, Abstract to give a deeper understanding of concepts. Reasoning will be developed through the exploration of mathematical patterns and images with a variety of problem solving methods for just one question. Formal structure to answering GCSE questions will be embedded. Past papers will be part of every day lessons</p> <p>Learning to move forward and uncover mathematical ideas from mistakes and misconceptions via true/false, spot the mistake and other reasoning tasks where students are required to make a judgement and justify their answers.</p> <p>Knowledge organiser will be provided for each block to enable students to recall keywords, facts, formulas and/or formal methods. Revision maps and other resources will be utilized to aid recall</p> <p>WOW moments will occur when students solve complex problems, when the barrier wall disappears and they have a moment of satisfying clarity (no matter how brief) or spotting a relationship that was previously unseen. Completion and accessing more exam questions will boost motivation to succeed. Numeracy and calculator skills will be embedded.</p>	<p>Maths relay to take place annually between classes.</p> <p>Students to continue applying the Maths they've learned to real life situations, for example finances.</p>	<p>Topic Assessments completed after each topic.</p> <p>Mock Exams November</p> <p>Mock Exams February</p> <p>Real GCSE Exams May/ June</p>

Impact:

Students will have increased understanding and confidence in maths and be able to apply new skills to a variety of new and challenging mathematical problems. Students will know more and remember more. Students will have developed their AO2/3 skills enabling them to manipulate familiar and unfamiliar vocabulary and deduce mathematical content. They will be familiar with a variety of exam questions and be suitably prepared to answer examination style questions. There will be an increase in attainment, evidenced in regular, formal and interleaved assessments.

Autumn Half Term 1 – Graphs

Block 1 – Weeks 1 and 2	Block 2 – Weeks 3 and 4	Block 3 – Weeks 5 and 6
Gradients and lines <ul style="list-style-type: none"> Find and use equations of straight lines 	Non-linear graphs <ul style="list-style-type: none"> Plot and read from quadratic curves Understand and find roots Plot cubic and reciprocal graphs 	Using graphs <ul style="list-style-type: none"> Reflect shapes in a given line Construct and interpret speed, distance and time graphs Construct and interpret real-life graphs
Notes/Links/Interleaving <ul style="list-style-type: none"> Revisit solving equations Incorporate proportional reasoning e.g. conversions 		Additional Higher Content <ul style="list-style-type: none"> Understand and use exponential graphs Understand and use equations of perpendicular lines Find the equation of tangent to a curve Estimate the area under a curve

Autumn Half Term 2 – Algebra

Block 4 – Weeks 7 and 8	Block 5 – Weeks 9 and 10	Block 6 – Weeks 11 and 12
Expanding and factorising <ul style="list-style-type: none"> Expand a single bracket and binomials Factorise into a single bracket Factorise quadratics of the form $x^2 + bx + c$ Solve quadratic equations Simplify complex algebraic expressions including algebraic fractions 	Changing the subject <ul style="list-style-type: none"> Review solving linear equations Change the subject of a formula, including perimeter, area and volume formulae Volume of a pyramid 	Functions <ul style="list-style-type: none"> Find inputs and outputs Show algebraic expressions are equivalent Solve problems using the kinematics formulae
Notes/Links/Interleaving <ul style="list-style-type: none"> Revisit directed number arithmetic Link to graphs 		Additional Higher Content <ul style="list-style-type: none"> Solve quadratic equations by completing the square and using the quadratic formula Changing the subject of a formula where the subject appears more than once Solving equations by iteration Work with composite and inverse functions

Spring Half Term 1 – Reasoning		
Block 1 – Weeks 1 and 2	Block 2 – Weeks 3 and 4	Block 3– Weeks 5 and 6
Multiplicative reasoning <ul style="list-style-type: none"> Review scale and enlargement Work with direct and inverse proportion Calculate with pressure and density Determine whether a problem requires additive or multiplicative reasoning 	Geometric reasoning <ul style="list-style-type: none"> Review angle facts, focusing on the language of reasons and chains of reasoning Review Pythagoras' theorem and using trigonometrical ratios 	Algebraic reasoning <ul style="list-style-type: none"> Work with complex indices Review simplification of complex expressions and finding the n^{th} term rule Justify e.g. why a number is/isn't in a given sequence
Notes/Links/Interleaving <ul style="list-style-type: none"> Revise non-calculator methods Revisit other topics as detailed above 		Additional Higher Content <ul style="list-style-type: none"> Solve problems involving variation with powers Construct formal geometric proofs, including the remaining circle theorems Construct formal algebraic proofs

Spring Half Term 2 – Revision and Communication		
Block 4 – Weeks 7 and 8	Block 5 – Weeks 9 and 10	Block 6 – Weeks 11 and 12
Transforming and constructing <ul style="list-style-type: none"> Revisit transformations of shapes, linking to types of symmetry Perform standard constructions using ruler and protractor or ruler and compasses Solve loci problems 	Listing and describing <ul style="list-style-type: none"> Work with organised lists Sample spaces and probability Complete and use Venn diagrams Work with plans and elevations Use data to compare distributions 	Show that... <ul style="list-style-type: none"> Illustrate equivalence, numerically and algebraically Justify answers Use the language of angles rules Use the conditions for congruent triangles
Notes/Links/Interleaving <ul style="list-style-type: none"> Throughout 		Additional Higher Content <ul style="list-style-type: none"> Product rule for counting Understand and use trigonometrical graphs Sketch translations and reflections of the graph of a given function Formal proof with congruent triangles

Summer Half Term 1 – Revision

Block 1 – Weeks 1 to 6

During this last half-term in the run up to the final examinations, we expect teachers to work with students on past papers and topics that have been identified that need further attention. We will provide some support material to help with key topics including:

- Number work, including multi-step problem solving
- Forming and solving equations and inequalities
- Working with formulae that students are expected to know e.g. area and volume formulae
- Probability

etc.

Glossary of Key Terms:

A01

A01

LORIC

Interleaving

Mastery

Add any terms here which are specific to your subject that a 'non Marches' audience would need explained. The audience range for this document is wide: Parents, Governors, OFSTED etc.