

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:
 Y10 Mathematics is designed to maximise progression and allow flexibility. Each topic presents opportunities to recap on previously covered content whilst also giving students the chance to extended themselves on the journey to achieving their potential.

**YEAR 10
MATHS**

Content / Units	Skills	Knowledge	Prior—Y9	Next Steps Y11
<ul style="list-style-type: none"> • Similarity • Developing algebra • Geometry • Proportions and proportional change • Delving into data • Using number 	<p>Students will be able to solve problems linked to triangles.</p> <p>Students will be able to form and solve inequalities, equations and simultaneous equations.</p> <p>Students will be able to answer complex calculations without a calculator.</p> <p>Students will be able to solve problems linked to circles.</p> <p>Students will be able to solve FDP problems.</p>	<p>Student will know trigonometric ratios.</p> <p>Students will know the difference between equations, inequalities and simultaneous equations.</p> <p>Students will know and understand BIDMAS</p> <p>Students will know the formulas for finding the area and circumference of a circle, they will know the main circle theorems.</p> <p>Students will know how to solve FDP problems.</p>	<p>All content covered during the KS3 course creates the foundation for learning at GCSE.</p>	<p>Students will build on these key skills in year 11 and be able to apply them to different contexts and be able to identify when to use each skill.</p>

Implementation	Marches Futures Links	Summative Assessment
<p>There will be 11 LP units of approx. 2/3 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 past paper 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.</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.</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.</p> <p>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 Exam 1 December</p> <p>Mock Exam 2 March</p> <p>Mock Exam 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 – Similarity

Block 1 – Weeks 1 to 3	Block 2 – Weeks 4 to 6
<p>Congruence, similarity and enlargement.</p> <ul style="list-style-type: none"> Understand the difference between congruence and similarity Enlarge a shape about a given point; understand and use similarity Find missing sides in similar shapes including pairs of similar triangles Understand and use the conditions for a pair of congruent triangles 	<p>Trigonometry</p> <ul style="list-style-type: none"> Understand trigonometric ratios Work out missing lengths and angles in right-angled triangles Know and use the exact values of key angles
<p style="text-align: center;">Notes/Links/Interleaving</p> <ul style="list-style-type: none"> Revisit angle rules, including angles in parallel lines Revisit equations, especially variants of $ax = b$ Revisit Pythagoras' theorem 	<p style="text-align: center;">Additional Higher Content</p> <ul style="list-style-type: none"> Area and volume of similar shapes Formal proof of congruency of triangles Enlarge a shape by a negative scale factor Use trigonometry in 3-D shapes Derive and use the sine and cosine rules Use the formula $\frac{1}{2}ab\sin C$ to find the area of non-right angled triangles.

Autumn Half Term 2 – Developing Algebra

Block 3 – Weeks 7 to 9	Block 4– Weeks 10 to 12
<p>Representing solutions of equations and inequalities</p> <ul style="list-style-type: none"> Form and solve equations and inequalities in a variety of contexts, including with unknowns on both sides Represent solutions to inequalities on a number line Represent solutions to equations graphically 	<p>Simultaneous equations</p> <ul style="list-style-type: none"> Understand the meaning of solution, appreciating that some equations have multiple solutions Form and solve a pair of linear simultaneous equations graphically Form and solve a pair of linear simultaneous equations algebraically
<p style="text-align: center;">Notes/Links/Interleaving</p> <ul style="list-style-type: none"> Context for equations to include probability, area, angles, ratio problems etc. 	<p style="text-align: center;">Additional Higher Content</p> <ul style="list-style-type: none"> Use set notation for solutions Solve Inequalities in two variable, identifying regions Solve quadratic equations and inequalities (by factorisation only) Solve simultaneous equations with one linear and one quadratic

Spring Half Term 1 – Geometry

Block 1 – Weeks 1 and 2

Angles and bearings

- Review KS3 angles rules
- Understand and use bearings

Block 2 – Weeks 3 and 4

Working with circles

- Review area and circumference
- Name parts of a circle and perform related calculations
- Find areas and volumes related to circles – cylinder, cone, sphere etc.

Block 3 – Weeks 5 and 6

Vectors

- Understand vector notation
- Vector arithmetic – addition, subtraction and multiplication by a scalar
- Vectors and translations

Notes/Links/Interleaving

- Revisit trigonometry
- Revisit area and volumes of other shapes, and compound shapes
- Estimation, rounding and significant figures

Additional Higher Content

- Derive, use and prove first four circle theorems (Note: The rest are covered in Y11)
- Understand and use the equation of a circle
- Construct geometric proofs with vectors

Spring Half Term 2 – Proportions and proportional change

Block 4 – Weeks 7 and 8

Ratio and fractions

- Use ratios, including with mixed units
- Fractions in ratios
- Fractions from ratios
- Combining ratios
- Unit pricing ('best buys')
- Currency conversions

Block 5 – Weeks 9 and 10

Percentages and interest

- Convert fractions, decimals and percentages
- Find percentages and percentage changes
- Find one number as a percentage of another
- Calculate simple and compound interest
- Evaluate exponential change e.g. depreciation
- Find original values

Block 6 – Weeks 11 and 12

Probability

- Review of single event probability – comparing theoretical and experimental
- Understand and work with mutually exclusive and independent events
- Construct and interpret tree diagrams
- Find probabilities from frequency trees, tables and Venn diagrams

Notes/Links/Interleaving

- Revisit formal methods of calculation (also Summer 2)
- Revisit fraction arithmetic

Additional Higher Content

- Revise area and volume ratios
- Use iterative methods
- Calculate and interpret conditional probabilities

Summer Half Term 1 – Delving into data

Block 1 – Weeks 1 to 6

Collecting, representing and interpreting data

- Understand sampling including the possible limitations
- Construct and interpret tables and line graphs for time series data
- Understand and represent with grouped data
- Understand and identify correlation
- Use lines of best fit, understanding the dangers of extrapolation
- Construct and interpret frequency polygons
- Evaluate measures of location and dispersion
- Use statistical diagrams and measures to compare distributions

Notes/Links/Interleaving

- Use equations e.g. solving problems about the mean
- Use non-calculator methods when appropriate

Additional Higher Content

- Construct and interpret cumulative frequency diagrams, box-plots and histograms
- Understand quartiles; use and interpret the inter-quartile range

Summer Half Term 2 – Using Number

Block 2 – Weeks 7 and 8

Non-calculator methods

- Use four operations with integers (positive and negative), decimals and fractions with and without context (include all areas of previous study)
- Work with exact answers e.g. area and volume
- Evaluate calculations involving percentages

Block 3 – Weeks 9 and 10

Types of number and sequences

- Use factors, multiples, primes and prime factorisation
- Recognise arithmetic and geometric sequences
- Recognise and use other sequences

Block 4– Weeks 11 and 12

Indices and roots

- Work out powers and roots
- Use the rules of indices
- Calculate with numbers in standard index form

Notes/Links/Interleaving

- Convert FDP
- Revisit exact trigonometrical values
- Revisit area and volume formulae (without a calculator)
- Find exact answers in terms of π
- Solve problems involving financial mathematics

Additional Higher Content

- Calculate with surds
- Find the rule for the n^{th} term of a quadratic sequence
- Understand and use fractional indices
- Work with rational and irrational numbers, including recurring decimals
- Work with limits of accuracy, including upper and lower bounds

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.