

## Year 8 Autumn Half Term 1

| Overarching topic: Percentages, Percentage Change, Money Calculations, Indices, Solving Equations |                                                                                                                                                                                                                                                                                                                             |
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| Why is this topic being studied at this time?                                                     | Students begin Year 8 by building directly on the Year 7 work on fractions, decimals, percentages and algebra. Percentages and financial mathematics provide meaningful real-world applications while indices and equations develop algebraic fluency needed for later work on graphs, formulae and algebraic manipulation. |

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| How does it fit into the wider subject curriculum? | Compound interest has been called the "eighth wonder of the world" because of how quickly percentages can cause money to grow. Banks, businesses, scientists and economists all use percentage change and algebraic models to make predictions. Cross-curricular links include Business Studies, Economics and Science. |
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|                                                                                                          | Essential                                 | Core                                          | Ambitious                                            |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | What is a percentage?                     | How do we calculate percentage change?        | How are percentages used in finance and economics?   |
|                                                                                                          | How do we find a percentage of an amount? | How do we compare value for money?            | Why do negative powers work?                         |
|                                                                                                          | What is percentage increase and decrease? | How do index laws simplify calculations?      | How do algebraic models help predict outcomes?       |
|                                                                                                          | What is an index?                         | How do we solve multi-step equations?         | How can percentage growth create exponential change? |
|                                                                                                          | What does it mean to solve an equation?   | How can equations model real-life situations? | How are equations used in science?                   |

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| <b>The Key skills/techniques</b> | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                                                         |
|                                  | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>                                |
|                                  | Practise percentage calculations in real-life contexts.                                                                                        | Shopping investigations, best-buy problems and percentage-change tasks. |
|                                  | Solve increasingly complex equations.                                                                                                          | Worked examples, algebra puzzles and error-analysis activities.         |

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| Throughout year 7 and 8, alongside the content in the provision map here, students will embrace the statistics elements of the curriculum through a bespoke set of projects integrating the use of technology. This will help to develop their skills using Excel and other mathematical software while covering various aspects of data handling and data analysis. |
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## Year 8 Autumn Half Term 2

Overarching topic: Sequences, Ratio, Proportion and Scale Diagrams.

Why is this topic being studied at this time?

After strengthening algebra in Autumn 1, students are ready to identify patterns and relationships. Sequences develop generalisation skills while ratio and scale diagrams build multiplicative reasoning needed for GCSE mathematics and science.

How does it fit into the wider subject curriculum?

Fibonacci noticed a famous sequence while studying rabbit populations. Today, sequences appear in coding, music, nature and architecture. Scale diagrams are used in map-making, engineering, architecture and gaming design. Cross-curricular links include Geography, Computing and Design Technology.

|                                                                                                          | Essential                                                                                                                                               | Core                                                                                                                                                                                                                                    | Ambitious                                                                                                                                                                                                                                                          |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | <p>What is a sequence?</p> <p>What is a term-to-term rule?</p> <p>What is a ratio?</p> <p>What does a scale mean?</p> <p>How do we simplify ratios?</p> | <p>How do we find the nth term?</p> <p>How do we share quantities in a ratio?</p> <p>How do equivalent ratios work?</p> <p>How do scale diagrams represent real objects?</p> <p>How are ratios linked to fractions and percentages?</p> | <p>How can patterns be represented algebraically?</p> <p>Why do sequences help mathematicians make predictions?</p> <p>How are scale factors used in architecture?</p> <p>How can ratio solve complex problems?</p> <p>How do ratio and algebra work together?</p> |

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| <b>The Key skills/techniques</b> | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                                          |  |
|                                  | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>                 |  |
|                                  | Identify and generalise numerical and visual patterns.                                                                                         | Sequence investigations and nth-term challenges.         |  |
|                                  | Apply ratio across varied contexts.                                                                                                            | Scale drawing tasks, map work and ratio problem solving. |  |

Throughout year 7 and 8, alongside the content in the provision map here, students will embrace the statistics elements of the curriculum through a bespoke set of projects integrating the use of technology. This will help to develop their skills using Excel and other mathematical software while covering various aspects of data handling and data analysis.

## Year 8 Spring Half Term 1

| Overarching topic: Significant Figures, Coordinates and Midpoints, Area, Circles and Standard Form. |                                                                                                                                                                                                                                |
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| Why is this topic being studied at this time?                                                       | Students revisit geometry and measurement from Year 7 while extending to circles, standard form and more sophisticated calculations. This provides important preparation for later scientific applications and geometry units. |

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| How does it fit into the wider subject curriculum? | Astronomers use standard form to describe distances in space because ordinary numbers become too large. The number $\pi$ has fascinated mathematicians for over 2,000 years and appears throughout nature and engineering. Cross-curricular links include Physics, Astronomy and Engineering. |
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|                                                                                                          | Essential                                                                                                                                  | Core                                                                                                                                                                                                     | Ambitious                                                                                                                                                                                |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | What are significant figures?<br>What is a midpoint?<br>What is special about a circle?<br>What is standard form?<br>How is area measured? | How do we calculate the area of complex shapes?<br>How do we calculate circumference?<br>How do we calculate area of circles?<br>How do we use standard form?<br>How do coordinates help solve problems? | Why is $\pi$ important?<br>Why do scientists use standard form?<br>How can coordinates model movement?<br>How do units affect area calculations?<br>How is geometry used in engineering? |

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| <b>The Key skills/techniques</b> | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                                               |
|                                  | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>                      |
|                                  | Select appropriate levels of precision.                                                                                                        | Rounding challenges and estimation investigations.            |
|                                  | Apply formulae accurately.                                                                                                                     | Practical measurement tasks and multi-step geometry problems. |

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## Year 8 Spring Half Term 2

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| Overarching topic: Venn Diagrams, HCF and LCM, 3D Shapes, Nets, Surface Area and Volume. |  |
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| Why is this topic being studied at this time? | Students now combine number structure with geometric reasoning. Prior learning on factors, multiples and area is extended into more abstract set notation and three-dimensional mathematics. |
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| How does it fit into the wider subject curriculum? | Leonhard Euler helped create many ideas used in set theory. Engineers and product designers use surface area and volume calculations when designing packaging, buildings and vehicles. Cross-curricular links include Design Technology, Engineering and Science. |
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|                                                                                                          | Essential                                                                                                     | Core                                                                                                                                                                                 | Ambitious                                                                                                                                                                                                                    |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | What is a Venn diagram?<br>What is HCF and LCM?<br>What is a net?<br>What is surface area?<br>What is volume? | How do factors and multiples connect?<br>How do we interpret Venn diagrams?<br>How do we calculate surface area?<br>How do we calculate volume?<br>How do units affect measurements? | How can sets be used to solve problems?<br>Why are volume and surface area different?<br>How do designers minimise material use?<br>How does geometry influence manufacturing?<br>How can diagrams represent abstract ideas? |

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| <b>The Key skills/techniques</b> | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                                     |
|                                  | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>            |
|                                  | Organise information logically.                                                                                                                | Venn diagram investigations and sorting activities. |
|                                  | Develop understanding of 3D structures.                                                                                                        | Model construction and net-drawing activities.      |

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develop their skills using Excel and other mathematical software while covering various aspects of data handling and data analysis.

### Year 8 Summer Half Term 1

| Overarching topic: Linear Graphs, Transformations, Angle Facts and Inequalities. |                                                                                                                                                                                                                                         |
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| Why is this topic being studied at this time?                                    | Students have developed substantial algebraic understanding and are now ready to represent relationships graphically. Graphs, transformations and inequalities build strong foundations for GCSE coordinate geometry and functions.     |
| How does it fit into the wider subject curriculum?                               | Graphs are one of the most powerful communication tools in science and economics. Video game designers use coordinate transformations to move objects around a screen. Cross-curricular links include Physics, Computing and Geography. |

|                                                                                                          | Essential                                                                                                                        | Core                                                                                                                                                                             | Ambitious                                                                                                                                                                                             |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | What is a graph?<br>What is a transformation?<br>What is an inequality?<br>What angle facts do we know?<br>What is a coordinate? | How do we plot graphs?<br>How do we find equations of straight lines?<br>How do we transform shapes?<br>How do we solve inequalities?<br>How do angle facts help solve problems? | How do graphs model real situations?<br>Why do transformations preserve shape?<br>How can inequalities represent constraints?<br>How can geometry explain algebra?<br>How are graphs used in science? |

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| <b>The Key skills/techniques</b> | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                              |
|                                  | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>     |
|                                  | Move between algebraic, graphical and geometric forms.                                                                                         | Graph plotting and matching representations. |
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Justify solutions.

Angle reasoning tasks and inequality explanations.

Throughout year 7 and 8, alongside the content in the provision map here, students will embrace the statistics elements of the curriculum through a bespoke set of projects integrating the use of technology. This will help to develop their skills using Excel and other mathematical software while covering various aspects of data handling and data analysis.

## Year 8 Summer Half Term 2

Overarching topic: Expanding Double Brackets, Factorising, Algebraic Fractions, Recurring Decimals

Why is this topic being studied at this time?

The final half term brings together the algebraic and numerical skills developed throughout Years 7 and 8. Students encounter more sophisticated algebra as preparation for Year 9 pathways.

How does it fit into the wider subject curriculum?

Recurring decimals puzzled mathematicians for centuries because they reveal surprising connections between fractions and infinite patterns. . Cross-curricular links include Science, Economics and Computing.

|                                                                                                          | Essential                                                                                                                                      | Core                                                                                                                                                               | Ambitious                                                                                                                                                                                             |
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| <b>The Big questions</b><br>(what questions will students be able to answer with mastery of this topic?) | What is a double bracket?<br>What does factorising mean?<br>What is an algebraic fraction?<br>What is a recurring decimal?                     | How do we expand double brackets?<br>How do we factorise expressions?<br>How do we simplify algebraic fractions?<br>How do fractions relate to recurring decimals? | Why does factorising reverse expansion?<br>How do algebraic fractions behave like number fractions?<br>How do infinite decimal patterns arise?<br>How does algebra prepare us for higher mathematics? |
| <b>The Key skills/techniques</b>                                                                         | The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge |                                                                                                                                                                    |                                                                                                                                                                                                       |
|                                                                                                          | <b>Skill/technique</b>                                                                                                                         | <b>How will this skill be developed?</b>                                                                                                                           |                                                                                                                                                                                                       |
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Manipulate expressions  
confidently and accurately.

Structured practice, retrieval and multi-step algebra  
problems

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