



Our curriculum is carefully sequenced to ensure cumulative knowledge and progression. Each unit builds on the last, with clear concepts that students must grasp to progress. We define end points to illustrate what mastery looks like by year-end.

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| Location of resources:           | <a href="#">JOHN Maths Staff - Documents</a><br><br><b>John Port Spencer Academy Sharepoint – Maths Staff – General – Schemes of Work – Year 9</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Curriculum intent and rationale: | <p><i>Every student to be the best mathematician they can be.</i></p> <p>Our aim is that every student has the opportunity to reach their potential mathematically and to be equipped to apply their mathematical knowledge to other subject areas, future courses, careers and everyday life.</p> <p>We aim for students to acquire substantive knowledge and procedural fluency along with conceptual understanding and the ability to apply reasoning and problem-solving skills.</p> <p><b>Curriculum organisation:</b> Students are banded into upper and lower attainment groups. Students receive 4 lessons each week.</p> |
| National Curriculum Links:       | <p><a href="#">National curriculum in England: mathematics programmes of study - GOV.UK</a></p> <p><b>Students will develop fluency, mathematical reasoning and problem solving through:</b></p> <ul style="list-style-type: none"> <li>• Number</li> <li>• Algebra</li> <li>• Ratio, Proportion and Rates of Change</li> <li>• Geometry and Measures</li> <li>• Probability</li> <li>• Statistics</li> </ul>                                                                                                                                                                                                                     |

| What content needs to be covered? Key Knowledge and skills / misconceptions to address (with vocab in bold and spelling underlined)                                                                                        |                                                                                                                                                                                                                                                                          |                                                                                                                                                                      |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                 |
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| By the end of the year students will know:                                                                                                                                                                                 |                                                                                                                                                                                                                                                                          |                                                                                                                                                                      |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                                 |
| Half Term 1                                                                                                                                                                                                                | Half Term 2                                                                                                                                                                                                                                                              | Half Term 3                                                                                                                                                          | Half Term 4                                                                                                                                                                                                                        | Half Term 5                                                                                                                                                                                                       | Half Term 6                                                                                                                                                                                                                     |
| <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Rounding, estimation &amp; bounds</li> <li>• Rules of indices</li> <li>• Standard form</li> <li>• Sequences</li> </ul> | <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Expanding &amp; factorising brackets</li> <li>• Equations &amp; Inequalities</li> <li>• Changing the subject of an equations</li> <li>• Compound measures</li> </ul> | <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Linear Graphs</li> <li>• Construction</li> <li>• Loci</li> </ul> | <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Non-linear graphs</li> <li>• Angles &amp; parallel lines</li> <li>• Similarity &amp; congruence</li> <li>• Bearings</li> </ul> | <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Real life graphs</li> <li>• Direct &amp; inverse proportion</li> <li>• Proportion &amp; percentage</li> </ul> | <p>Students will learn key knowledge and skills about:</p> <ul style="list-style-type: none"> <li>• Trigonometry</li> <li>• Problem solving with trigonometry &amp; Pythagoras</li> <li>• Problem solving in context</li> </ul> |



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| <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                                                                                    | <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                                                                                                | <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                       | <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                                                                                                                | <b>Challenge:</b><br>Students are challenged to develop reasoning and problem-solving skills.                                                                                                                                   |
| <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Trying to follow rules for rounding rather than understanding the concept.</li><li>Not understanding the rules of indices and not remembering the rules</li><li>Multiplying and dividing by powers of 10</li><li>Understanding the use of n to re position of a term in a sequence</li></ul>                                                                                                                                                                                                                                                                                                                                           | <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Knowledge of factors</li><li>Use of inequality symbols to compare size</li><li>Use of inverses to solve equations and inequalities and change the subject</li></ul> | <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Substitution</li><li>Plotting co-ordinates</li><li>Not realising that a line segment is being plotted and the line is infinite</li><li>Use of ratio in scale drawings</li></ul> | <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Substitution</li><li>Plotting co-ordinates</li><li>Angle notation</li><li>Using a protractor</li></ul> | <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Use of ratio</li><li>An understanding of proportion in real life</li><li>Understanding concept of percentage and applying in different contexts</li><li>Interpreting worded questions</li></ul> | <b>Misconceptions:</b> <ul style="list-style-type: none"><li>Understanding of similar triangles</li><li>Changing the subject</li><li>Interpreting a worded question</li><li>Supporting work with a well-drawn diagram</li></ul> |
| <b>Previous learning that is particularly relevant:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                     |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                 |
| <b>Recall knowledge from year 7 &amp; 8:</b><br><b>Rounding to 3dp, powers of 10, squares and cubes, sequences, expanding &amp; factorising a single bracket, inequalities, forming &amp; solving equations, inverse operations, using a calculator</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                  | <b>Recall knowledge from year 7 &amp; 8:</b><br><b>Plotting co-ordinates, properties of 2D shapes, circles, measures, angle rules</b>                                                                                                        |                                                                                                                                                                     | <b>Recall knowledge from year 7 &amp; 8:</b><br><b>Ratio, graphs, percentages, Pythagoras’ Theorem</b>                                                                                                                                                       |                                                                                                                                                                                                                                 |
| <b>Future Learning</b> - How content prepares students for future units, Key Stage 4, or Key Stage 5?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                     |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                 |
| The work in this term links to future learning by developing work with number and algebra<br>This knowledge is required throughout the Key Stages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                  | The work in this term links to future learning by developing work with graphs and accurate constructions.<br>This knowledge is required throughout the Key Stages.                                                                           |                                                                                                                                                                     | The work in this term links to future learning by developing work with graphs, proportion and trigonometry.<br>This knowledge is required throughout the Key Stages.                                                                                         |                                                                                                                                                                                                                                 |
| <b>Outcomes:</b><br>By the end of the year pupils will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                     |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                 |
| Know how to round numbers and understand the bounds of accuracy from numbers that have been rounded.<br>Calculate with powers of numbers and manipulate expressions with indices, including numbers in standard form.<br>Plot linear and curved graphs from an equation and sketch graph to represent real life contexts.<br>To accurately construct scale diagrams and loci using pencil, ruler, protractor or compasses.<br>To calculate with angles in parallel lines and apply to bearings.<br>Calculate and solve problems with direct and inverse proportion<br>Calculate with percentages<br>Use trigonometric ratios and Pythagoras’ Theorem to find sides/angles in right angles triangles |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                     |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                 |
| <b>Apply all knowledge to problem solving and reasoning</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                     |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                 |



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| <b>Assessment Strategy</b> How we know our students are knowing and remembering more –<br>Data from hunting not fishing, formative and summative assessment/s is used to adapt teaching and provide targeted challenge and intervention, supporting SEND and disadvantaged pupils.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                        |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Formative:</b><br>Retrieval starters<br>Use of mini whiteboards in lesson: immediate assessment to enable adaptations to lessons and intervention<br>Highlighter plenaries followed by Highlighter Starters<br>Questioning: methods of participation<br>Termly tests used in a formative manner; followed by developmental work<br>Analysis from Sparx Homework                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                        | <b>Summative (&amp; cumulative)</b><br>Tests at three points in the year. Each student to complete two sections from: Base, Core and Depth according to ability | <b>Opportunities to revisit past learning:</b><br>Sparx HW questions<br>Retrieval starters<br>Interleaving built into SoW<br>New content that requires knowledge of past learning<br><br><b>Opportunities for homework (including apps):</b><br>Sparx<br>Knowledge Organiser<br>Revision for tests |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>How is the curriculum adapted to meet the needs of SEND and disadvantaged pupils, while maintaining high expectations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                        |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Expected prior knowledge is revisited. Lessons are adapted to the needs of each class. Use of manipulatives and different representations are encouraged.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                        |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Wider Curriculum and Enrichment – cultural capital and real world application -</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                        |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Enriching experiences:</b> <ul style="list-style-type: none"><li><b>High ability students are entered for the UKMT Maths Challenge</b></li></ul><br><b>Our curriculum supports the school value of:</b> <table><tr><td><b>Joy</b></td><td><i>Foster enthusiasm and engagement by Using manipulatives and a variety of representations to develop understanding. By creating challenge at a level where students can achieve success.</i></td></tr><tr><td><b>Progress</b></td><td><i>We monitor and support progress through The use of assessment strategies during lessons that support adaptive teaching strategies. Analysis of Sparx homework. Analysis of termly test data with feedback and development work.</i></td></tr><tr><td><b>Success</b></td><td><i>We celebrate success by Giving verbal praise, achievement points, certificates, Sparx leader board, articles in the JPSA Newsletter.</i></td></tr></table> |                                                                                                                                                                                                                                        | <b>Joy</b>                                                                                                                                                      | <i>Foster enthusiasm and engagement by Using manipulatives and a variety of representations to develop understanding. By creating challenge at a level where students can achieve success.</i>                                                                                                     | <b>Progress</b> | <i>We monitor and support progress through The use of assessment strategies during lessons that support adaptive teaching strategies. Analysis of Sparx homework. Analysis of termly test data with feedback and development work.</i> | <b>Success</b> | <i>We celebrate success by Giving verbal praise, achievement points, certificates, Sparx leader board, articles in the JPSA Newsletter.</i> | <b>Literacy, Oracy and disciplinary language:</b><br>The correct use and understanding of notation, key words and terms is essential for students to be able to understand explanations and questions and to be able to participate effectively, with confidence in discussion and written work.<br><br>Key words and terms are explicit in the Scheme of Work<br>Key words and mathematical notation are emphasised in lessons and used in discussion.<br>Lessons include opportunities to discuss in pairs before feeding back to the whole class. | <b>Cross-Curricular opportunities:</b><br><b>Science: compound measures, graphs</b><br><b>PE: compound measures, bearings</b><br><b>Geography: graphs, proportion &amp; percentage</b><br><br><b>Our curriculum supports personal development by:</b><br>Students need to develop resilience as they are challenged with harder problems. Students need to deal with being incorrect and thinking further or discussing to ensure that his leads to learning.<br><br><b>Careers / Employability skills:</b><br><br><b>How does the curriculum link to the following employability skills:</b><br><br><b>Listening –</b> Students need to listen carefully to explanations from their teacher and listen to their peers in class or group discussion<br><br><b>Speaking –</b> Students need to speak their ideas on the solutions to problems using correct terminology.<br><br><b>Problem solving –</b> All mathematical knowledge is applied to problem solving<br><br><b>Aiming high –</b> Learning become incrementally more challenging as a unit progresses. Teachers aim to ensure students progress as far as they are able. |
| <b>Joy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>Foster enthusiasm and engagement by Using manipulatives and a variety of representations to develop understanding. By creating challenge at a level where students can achieve success.</i>                                         |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Progress</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>We monitor and support progress through The use of assessment strategies during lessons that support adaptive teaching strategies. Analysis of Sparx homework. Analysis of termly test data with feedback and development work.</i> |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Success</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>We celebrate success by Giving verbal praise, achievement points, certificates, Sparx leader board, articles in the JPSA Newsletter.</i>                                                                                            |                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                        |                |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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| <b>Act with care, kindness, respect, and integrity</b> | <i>We build meaningful connections with our students by<br/>Ensuring a safe and supportive classroom environment with clear expectations of work and behaviour where there is mutual respect for all people in the room and all people feel valued.</i> |  | <p><b>Critical thinking</b> – Considering the information available to work with and deciding how best to use it and what calculations should be done.</p> <p><b>Staying positive</b> – – Questions can be challenging and students need to remain positive, find out how to deal with the challenges and understand that being ‘stuck’ ultimately leads to learning if dealt with positively.</p> <p><b>Leadership</b> – Leading in a group activity or discussion. Feeding back to the whole class on behalf of a group.</p> <p><b>Teamwork</b> – Working collaboratively when in a group or when working together as a pair. Being able to share resources fairly and sensible.</p> <p><b>Creativity</b> – finding novel solutions, writing a clear solution.</p> <p><b>Employment Sectors discussed include:</b></p> <p><b>Standard Form:</b> astronomers, biologists, geologists, marine biologists, scientists, virologists, engineers<br/> <b>Inequalities:</b> emergency planners, nurses, weighbridge operators, accountants, teachers, stock traders, chefs, energy suppliers<br/> <b>Algebra:</b> epidemiology, robotics, cryptography, research, computer science, geneticists, applied mathematicians, neuroscientists, engineers<br/> <b>Graphs:</b> construction project managers, athletes, hairdressers, IT management, psychologists, mechanics<br/> <b>Geometry:</b> air traffic control, vehicle designers, builders, artists, architects, medics, city planners, aerospace engineers</p> <p><b>In addition, video clips about:</b><br/> <b>Sports Engineer</b><br/> <b>Architects</b></p> |
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Curriculum impact is evaluated through pupil study, work scrutiny, and progress data. Findings inform regular curriculum review to ensure continuous improvement.

| When was this curriculum last reviewed? Include date | What changes were made and why?                                                                      | How is ongoing improvement ensured?                                             |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| June 2025                                            | Problem solving resources included following CPD and need to improve skills, resilience & engagement | QA climate walks<br>Review in Faculty Time<br>Follow up from CPD<br>Pupil voice |
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|                                                      |                                                                                                      |                                                                                 |



**JOHN PORT**  
SPENCER ACADEMY

Maths

# Curriculum Overview

## Key Stage 3 – Year 9.

Joy



Progress



Success



Act with care, kindness, respect and integrity

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