

## YEAR 10

### **Key information**

#### **Low Stakes Assessment**

Each topic outlined below will be assessed via an Exit Ticket at the end of the unit of learning. This will be teacher marked and whole class feedback will be provided.

#### **Summative Assessment**

Students will sit two assessments across the year that are used to provide an indication of the GCSE grade they are currently working at. Students will be provided with a revision list in advance and are expected to revise independently for these assessments. GCSE maths exams are tiered (higher/foundation) and final tiering decisions are made in the spring of Y11.

#### **ILS**

- Students in Y10 are expected to complete a 40-minute task on Sparx Maths each week. This is comprised of practice questions and flashcards. The tasks are set on a two-week lag behind taught curriculum content. Support videos are available within Sparx for reference if students are stuck, as well as worked examples on students' knowledge organisers.
- Key vocabulary should be practiced using flashcards or self-quizzing from the unit knowledge organiser.

#### **Wider Reading**

- Students can look in more depth at each unit of learning via the Sparx Maths Independent Learning function. This has videos and practice questions for self-study.
- Students can use revision guides for wider reading on a topic (see ParentPay for a selection of OCR specific resources).
- Students can use BBC Bitesize for wider reading on a topic.

#### **SMSC**

Students spiritual, moral, social and cultural development is fostered in maths through discussion activities in which different perspectives on a problem are discussed. Students are exposed to the work of a vast array of mathematicians through the curriculum and explicit cultural links to art, architecture and language are made where appropriate.



## Autumn Term

### A6a. Expanding & Factorising

#### Composites

- Expanding Double Brackets
- Expanding Triple Brackets
- Factorising Into Single Brackets
- Factorising Monic Quadratics

#### Key Vocabulary

|           |                                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------|
| Expand    | To multiply each term in the bracket by the coefficient.                                                 |
| Factorise | To put an expression into brackets by dividing by the highest common factor (the opposite of expanding). |
| Quadratic | A U-shaped graph with an equation of the form $y=ax^2+bx+c$ .                                            |

#### How to help at home

- Refer to the 'Algebra Tiles' video on the [Alder Maths Department](#) page
- [Expanding Double Brackets Video \(Corbett Maths\)](#)
- [Factorising Into Single Brackets Video](#)
- [Factorising Quadratics Video](#)

#### Careers Links

These algebraic skills are used in careers such as engineering, architecture, construction, computer programming, data science, finance, economics and scientific research. Professionals use algebra to model real-world situations, solve complex problems, design structures, develop algorithms, analyse data and optimise systems.

### A6b. Mathematical Relationships 4

#### Composites

- Forming and Solving Equations
- Solving Quadratic Equations
- Changing the Subject (Recap)
- Kinematics Formulae (SUVATs)
- Algebraic Proportion

#### Key Vocabulary

|            |                                                                                       |
|------------|---------------------------------------------------------------------------------------|
| Proportion | A relationship that describes how two things change in relation to each other.        |
| Roots      | The values on the x-axis through which a quadratic graph passes.                      |
| Solve      | To find a numerical value that satisfies a mathematical relationship (makes it true). |
| Subject    | The isolated variable.                                                                |

#### How to help at home

- Refer to the 'Algebra Tiles' video on the [Alder Maths Department](#) page
- [Solving Quadratics Video \(Corbett Maths\)](#)

#### Careers Links

These algebraic skills are used in careers such as engineering, physics, architecture, construction, aviation and computer programming. Professionals use equations to model real-world situations, calculate



|                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
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| <ul style="list-style-type: none"> <li>• <a href="#">Direct Proportion Video (Corbett Maths)</a></li> <li>• <a href="#">Inverse Proportion Video (Corbett Maths)</a></li> <li>• <a href="#">Changing the Subject (Corbett Maths)</a></li> </ul>                                                                                                                                                     | <p>motion, rearrange formulas, solve design problems and develop mathematical and scientific models.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| <h2 style="text-align: center;">A6c. Gradients &amp; Lines</h2>                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| <p><b>Composites</b></p> <ul style="list-style-type: none"> <li>• Drawing using <math>y = mx + c</math></li> <li>• Solve equations using graphs</li> <li>• Coordinate geometry</li> <li>• Finding the equation of a line using: <ul style="list-style-type: none"> <li>- The gradient and a point</li> <li>- Two points</li> </ul> </li> <li>• Verifying if a point lies on a line</li> </ul>       | <p><b>Key Vocabulary</b></p> <table> <tr> <td>Gradient</td><td>The steepness of a line.</td></tr> <tr> <td>Hypotenuse</td><td>The longest side on a right-angled triangle. It is always opposite the right angle.</td></tr> <tr> <td>y-intercept</td><td>The point at which the line crosses the y-axis.</td></tr> </table>                                                                                                                                                                                                                                                            | Gradient         | The steepness of a line.                                                          | Hypotenuse | The longest side on a right-angled triangle. It is always opposite the right angle. | y-intercept        | The point at which the line crosses the y-axis.                                                    |                      |                                                                                  |
| Gradient                                                                                                                                                                                                                                                                                                                                                                                            | The steepness of a line.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| Hypotenuse                                                                                                                                                                                                                                                                                                                                                                                          | The longest side on a right-angled triangle. It is always opposite the right angle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| y-intercept                                                                                                                                                                                                                                                                                                                                                                                         | The point at which the line crosses the y-axis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| <p><b>How to help at home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Drawing Using <math>y=mx+c</math> Video (Corbett Maths)</a></li> <li>• <a href="#">Midpoint of a Line Segment Video (Corbett Maths)</a></li> <li>• <a href="#">Distance Between Two Points Video (Corbett Maths)</a></li> <li>• <a href="#">Equation Through Two Points Video (Corbett Maths)</a></li> </ul> | <p><b>Careers Links</b></p> <p>These skills are used in careers such as engineering, architecture, surveying, computer graphics, game development and data analysis. Professionals use graphs and coordinates to model relationships, design and map structures, analyse data, and calculate positions and distances accurately.</p>                                                                                                                                                                                                                                                   |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| <h2 style="text-align: center;">G5. Angles &amp; Bearings</h2>                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| <p><b>Composites</b></p> <ul style="list-style-type: none"> <li>• Solving angle problems (recap)</li> <li>• Scale diagrams</li> <li>• Measuring bearings</li> <li>• Calculating bearings</li> <li>• Solving problems with bearings</li> </ul>                                                                                                                                                       | <p><b>Key Vocabulary</b></p> <table> <tr> <td>Alternate Angles</td><td>A pair of equal angles on opposite sides of a transversal through parallel lines.</td></tr> <tr> <td>Bearing</td><td>An angle measured clockwise from the North line, expressed using 3 digits.</td></tr> <tr> <td>Co-Interior Angles</td><td>A pair of angles that sum to <math>180^\circ</math> on the same side of a transversal through parallel lines.</td></tr> <tr> <td>Corresponding Angles</td><td>A pair of equal angles on the same side of a transversal through parallel lines.</td></tr> </table> | Alternate Angles | A pair of equal angles on opposite sides of a transversal through parallel lines. | Bearing    | An angle measured clockwise from the North line, expressed using 3 digits.          | Co-Interior Angles | A pair of angles that sum to $180^\circ$ on the same side of a transversal through parallel lines. | Corresponding Angles | A pair of equal angles on the same side of a transversal through parallel lines. |
| Alternate Angles                                                                                                                                                                                                                                                                                                                                                                                    | A pair of equal angles on opposite sides of a transversal through parallel lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| Bearing                                                                                                                                                                                                                                                                                                                                                                                             | An angle measured clockwise from the North line, expressed using 3 digits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| Co-Interior Angles                                                                                                                                                                                                                                                                                                                                                                                  | A pair of angles that sum to $180^\circ$ on the same side of a transversal through parallel lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |
| Corresponding Angles                                                                                                                                                                                                                                                                                                                                                                                | A pair of equal angles on the same side of a transversal through parallel lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                                                                                   |            |                                                                                     |                    |                                                                                                    |                      |                                                                                  |



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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Parallel</p> <p>Two straight lines that never intersect and are always the same distance apart (the same gradient).</p>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>How to help at home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Bearings Video (Corbett Maths)</a></li> <li>• <a href="#">Scale Drawings (BBC Bitesize)</a></li> </ul>                                                                                                                                                                                                                                                                                                     | <p><b>Careers Links</b></p> <p>These skills are used in careers such as surveying, architecture, construction, engineering, aviation, the military and maritime navigation. Professionals use angles, scale drawings and bearings to measure land, design structures, plan routes and navigate accurately.</p>                                                                                                                                                                                                                                       |
| <p><b>P5a. Collecting, Representing &amp; Interpreting Data 1</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>Composites</b></p> <ul style="list-style-type: none"> <li>• Data and Averages</li> <li>• Frequency Polygons</li> <li>• Understanding Sampling</li> <li>• Stratified Sampling</li> <li>• Capture-Recapture</li> <li>• Mean &amp; Mode from a Table</li> <li>• Median from a Table</li> <li>• Two-Way Tables</li> </ul>                                                                                                                                                                       | <p><b>Key Vocabulary</b></p> <p>Frequency      The number of times a particular data value occurs.</p> <p>Mean            A type of average - the sum of the data divide by the number of items.</p> <p>Median          A type of average - the middle piece of data in an ordered list.</p> <p>Mode            A type of average - the most frequent piece of a data in a set.</p> <p>Outlier          A value that stands apart from the data set.</p> <p>Sampling        A method of collecting data using a small group from the population.</p> |
| <p><b>How to help at home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Stratified Sampling Video (Corbett Maths)</a></li> <li>• <a href="#">Frequency Polygons Video (Corbett Maths)</a></li> <li>• <a href="#">Capture-Recapture Video (Corbett Maths)</a></li> <li>• <a href="#">Mode from a Table Video (Corbett Maths)</a></li> <li>• <a href="#">Median from a Table Video (Corbett Maths)</a></li> <li>• <a href="#">Mean from a Table Video (Corbett Maths)</a></li> </ul> | <p><b>Careers Links</b></p> <p>These skills are used in careers such as data science, medicine, market research, ecology, finance, government and public health. Professionals collect, analyse and interpret data to identify trends, make predictions, estimate populations and support informed decision-making.</p>                                                                                                                                                                                                                              |
| <p><b>N10a. Indices &amp; Roots</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



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| <b>Composites</b> <ul style="list-style-type: none"><li>• Index Laws (Recap)</li><li>• Evaluating positive fractional indices</li><li>• Identifying Surds</li><li>• Multiplicative Operations with Surds</li><li>• Simplifying Surds</li></ul>              | <b>Key Vocabulary</b> <table><tr><td>Base</td><td>The number being repeatedly multiplied.</td></tr><tr><td>Exponent</td><td>The number of repeats in the multiplication (synonym of index/indices).</td></tr><tr><td>Surd</td><td>An irrational root.</td></tr></table>                                                   | Base | The number being repeatedly multiplied. | Exponent | The number of repeats in the multiplication (synonym of index/indices). | Surd | An irrational root. |
| Base                                                                                                                                                                                                                                                        | The number being repeatedly multiplied.                                                                                                                                                                                                                                                                                   |      |                                         |          |                                                                         |      |                     |
| Exponent                                                                                                                                                                                                                                                    | The number of repeats in the multiplication (synonym of index/indices).                                                                                                                                                                                                                                                   |      |                                         |          |                                                                         |      |                     |
| Surd                                                                                                                                                                                                                                                        | An irrational root.                                                                                                                                                                                                                                                                                                       |      |                                         |          |                                                                         |      |                     |
| <b>How to help at home</b> <ul style="list-style-type: none"><li>• <a href="#">Laws of Indices Video (Corbett Maths)</a></li><li>• <a href="#">Fractional Indices Video (Corbett Maths)</a></li><li>• <a href="#">Surds Video (Corbett Maths)</a></li></ul> | <b>Careers Links</b> <p>These skills are used in careers such as engineering, architecture, physics, computer science and scientific research. Professionals use indices and surds to simplify calculations, solve equations, work with precise measurements and develop mathematical models for real-world problems.</p> |      |                                         |          |                                                                         |      |                     |

## Spring Term

### N10b. Types of Number and Sequences

|                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
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| <b>Composites</b> <ul style="list-style-type: none"><li>• Linear Sequences (Recap)</li><li>• Non-Linear Sequences</li><li>• Solving Problems with Factors and Multiples</li><li>• HCF and LCM in context</li></ul> | <b>Key Vocabulary</b> <table><tr><td>Factor</td><td>An integer that divides into a number without leaving a remainder, or integers that multiply to make a specific number.</td></tr><tr><td>HCF</td><td>Highest common factor - the biggest factor that two or more numbers/terms share.</td></tr><tr><td>Intersection</td><td>The overlapping part of a Venn diagram (AND <math>\cap</math>).</td></tr><tr><td>LCM</td><td>Lowest common multiple - the smallest multiple that two or more numbers/terms share.</td></tr><tr><td>Linear</td><td>Has a constant additive difference.</td></tr><tr><td>Multiple</td><td>The result of multiplying a number by a positive integer.</td></tr><tr><td>Union</td><td>Two ellipses that join (OR <math>\cup</math>).</td></tr></table> | Factor | An integer that divides into a number without leaving a remainder, or integers that multiply to make a specific number. | HCF | Highest common factor - the biggest factor that two or more numbers/terms share. | Intersection | The overlapping part of a Venn diagram (AND $\cap$ ). | LCM | Lowest common multiple - the smallest multiple that two or more numbers/terms share. | Linear | Has a constant additive difference. | Multiple | The result of multiplying a number by a positive integer. | Union | Two ellipses that join (OR $\cup$ ). |
| Factor                                                                                                                                                                                                             | An integer that divides into a number without leaving a remainder, or integers that multiply to make a specific number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| HCF                                                                                                                                                                                                                | Highest common factor - the biggest factor that two or more numbers/terms share.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| Intersection                                                                                                                                                                                                       | The overlapping part of a Venn diagram (AND $\cap$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| LCM                                                                                                                                                                                                                | Lowest common multiple - the smallest multiple that two or more numbers/terms share.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| Linear                                                                                                                                                                                                             | Has a constant additive difference.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| Multiple                                                                                                                                                                                                           | The result of multiplying a number by a positive integer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| Union                                                                                                                                                                                                              | Two ellipses that join (OR $\cup$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |
| <b>How to help at home</b> <ul style="list-style-type: none"><li>• <a href="#">Nth Term Video (Corbett Maths)</a></li></ul>                                                                                        | <b>Careers Links</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |                                                                                                                         |     |                                                                                  |              |                                                       |     |                                                                                      |        |                                     |          |                                                           |       |                                      |



- [Finding the HCF and LCM Video \(Corbett Maths\)](#)

These skills are used in careers such as computer science, engineering, cryptography, finance and logistics. Professionals use sequences and number theory to model patterns, schedule systems, optimise processes and solve problems involving efficiency, timing and resources.

## P5b. Collecting, Representing & Interpreting Data 2

### Composites

- Dual and Composite Bar Charts
- Interpolation and Extrapolation
- Scatter Graphs
- Pie Charts
- Time-Series Graphs
- Stem and Leaf Diagrams
- Identifying Misleading Graphs

### Key Vocabulary

|               |                                                                                |
|---------------|--------------------------------------------------------------------------------|
| Extrapolation | Using a line of best fit to estimate outside the range of data.                |
| Interpolation | Using a line of best fit to estimate within the range of data.                 |
| Proportion    | A relationship that describes how two things change in relation to each other. |

### How to help at home

- [Dual Bar Charts Video \(Corbett Maths\)](#)
- [Composite Bar Charts Video \(Corbett Maths\)](#)
- [Scatter Graphs Video \(Corbett Maths\)](#)
- [Pie Charts Video \(Corbett Maths\)](#)
- [Stem and Leaf Diagrams \(Corbett Maths\)](#)

### Careers Links

These skills are used in careers such as data analysis, business, economics, journalism, medicine, environmental science and market research. Professionals use graphs and statistical methods to present data clearly, identify trends, make predictions, compare information and support evidence-based decisions.

## R3. Ratios & Fractions

### Composites

- Manipulating Ratios
- Sharing into a Ratio (recap)
- Related Ratios
- Exchange Rates (recap)
- Sharing into a Ratio (Algebra)
- Solving Ratio and Algebra Problems

### Key Vocabulary

|       |                                                                                |
|-------|--------------------------------------------------------------------------------|
| Ratio | A multiplicative relationship describing how two numbers or variables compare. |
|-------|--------------------------------------------------------------------------------|



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
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| <b>How to help at home</b> <ul style="list-style-type: none"><li>Refer to the ‘Ratio Tables’ video on the <a href="#">Alder Maths Department</a> page</li><li><a href="#">Simplifying Ratio Video (Corbett Maths)</a></li><li><a href="#">Sharing into a Ratio Video (Corbett Maths)</a></li><li><a href="#">Ratios to Equations Video (Corbett Maths)</a></li><li><a href="#">Exchange Rates Video (Corbett Maths)</a></li></ul>                                                           | <b>Careers Links</b> <p>These skills are used in careers such as finance, banking, economics, engineering, construction, catering and pharmacy. Professionals use ratios and proportion to compare quantities, scale recipes and designs, calculate exchange rates, allocate resources and solve practical problems.</p>                                                                                                                                                                                                                                |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| <b>A6H. Higher Tier Algebra</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| <b>Composites</b> <p><i>Students following the foundation pathway will move straight to P6. Probability 4.</i></p>                                                                                                                                                                                                                                                                                                                                                                          | <b>Key Vocabulary</b> <table><tr><td>Factorise</td><td>To put an expression into brackets by dividing by the highest common factor (the opposite of expanding).</td></tr><tr><td>Iteration</td><td>The process of repeating a set of operations or procedures.</td></tr><tr><td>Perpendicular</td><td>Two straight lines that intersect at a right angle (at 90°).</td></tr><tr><td>Quadratic</td><td>A U-shaped graph with an equation of the form <math>y=ax^2+bx+c</math>.</td></tr><tr><td>Subject</td><td>The isolated variable.</td></tr></table> | Factorise | To put an expression into brackets by dividing by the highest common factor (the opposite of expanding). | Iteration | The process of repeating a set of operations or procedures. | Perpendicular | Two straight lines that intersect at a right angle (at 90°). | Quadratic | A U-shaped graph with an equation of the form $y=ax^2+bx+c$ . | Subject | The isolated variable. |
| Factorise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | To put an expression into brackets by dividing by the highest common factor (the opposite of expanding).                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| Iteration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The process of repeating a set of operations or procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| Perpendicular                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Two straight lines that intersect at a right angle (at 90°).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| Quadratic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A U-shaped graph with an equation of the form $y=ax^2+bx+c$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| Subject                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The isolated variable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"><li>Change the subject with two of the same variable</li><li>Factorising and solving non-monic quadratic equations</li><li>Using the Quadratic Formula</li><li>Equations of Perpendicular Lines</li><li>Iterative Processes</li><li>Iterative Formulae</li><li>Solve equations by iteration</li></ul>                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |
| <b>How to help at home</b> <ul style="list-style-type: none"><li>Refer to the ‘Algebra Tiles’ video on the <a href="#">Alder Maths Department</a> page</li><li><a href="#">Completing the Square Video</a></li><li><a href="#">Changing the Subject Video (Corbett Maths)</a></li><li><a href="#">Quadratic Formula Video (Corbett Maths)</a></li><li><a href="#">Iterative Processes Video (Corbett Maths)</a></li><li><a href="#">Perpendicular Lines Video (Corbett Maths)</a></li></ul> | <b>Careers Links</b> <p>These skills are used in careers such as engineering, physics, computer science, economics, architecture and finance. Professionals use advanced algebra and numerical methods to solve complex equations, model real-world systems, analyse motion and growth, design structures and run simulations where exact solutions are difficult to obtain.</p>                                                                                                                                                                        |           |                                                                                                          |           |                                                             |               |                                                              |           |                                                               |         |                        |



|                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
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|                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>P6. Probability 4</b>                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>Composites</b> <ul style="list-style-type: none"> <li>Relative Frequency</li> <li>Probabilities from frequency diagrams, Venn diagrams and probability trees</li> <li>Calculating Probabilities</li> <li>Sample space diagrams</li> <li>Using the Sum of Probabilities</li> </ul>                                                                                                                                   | <b>Key Vocabulary</b> <table> <tr> <td>Conditional</td><td>The likelihood of an event occurring given that another event has already occurred.</td></tr> <tr> <td>Frequency</td><td>The number of times a particular data value occurs.</td></tr> <tr> <td>Intersection</td><td>The overlapping part of a Venn diagram (AND <math>\cap</math>).</td></tr> <tr> <td>Probability</td><td>The likelihood of an event happening.</td></tr> <tr> <td>Union</td><td>Two ellipses that join (OR <math>\cup</math>).</td></tr> </table> | Conditional | The likelihood of an event occurring given that another event has already occurred. | Frequency  | The number of times a particular data value occurs. | Intersection | The overlapping part of a Venn diagram (AND $\cap$ ). | Probability | The likelihood of an event happening. | Union | Two ellipses that join (OR $\cup$ ). |
| Conditional                                                                                                                                                                                                                                                                                                                                                                                                            | The likelihood of an event occurring given that another event has already occurred.                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Frequency                                                                                                                                                                                                                                                                                                                                                                                                              | The number of times a particular data value occurs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Intersection                                                                                                                                                                                                                                                                                                                                                                                                           | The overlapping part of a Venn diagram (AND $\cap$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Probability                                                                                                                                                                                                                                                                                                                                                                                                            | The likelihood of an event happening.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Union                                                                                                                                                                                                                                                                                                                                                                                                                  | Two ellipses that join (OR $\cup$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"> <li>Conditional probability</li> </ul>                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>How to help at home</b> <ul style="list-style-type: none"> <li><a href="#">Relative Frequency Video (Corbett Maths)</a></li> <li><a href="#">Probability Trees Video (Corbett Maths)</a></li> <li><a href="#">Sample Space Diagrams Video (Corbett Maths)</a></li> <li><a href="#">Conditional Probability Video (Corbett Maths)</a></li> <li><a href="#">Sum of Probabilities Video (Corbett Maths)</a></li> </ul> | <b>Careers Links</b> <p>These skills are used in careers such as actuarial science, insurance, finance, data science, medicine, engineering and meteorology. Professionals use probability to assess risk, predict outcomes, model uncertainty, analyse data and make informed decisions in uncertain situations.</p>                                                                                                                                                                                                           |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>R4. Percentages &amp; Interest</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| <b>Composites</b> <ul style="list-style-type: none"> <li>FDP Equivalents (recap)</li> <li>Using Multipliers (recap)</li> <li>Percentage Change (recap)</li> <li>Simple Interest (recap)</li> <li>Repeated Percentage Change (Growth and Decay)</li> <li>Compound Interest</li> </ul>                                                                                                                                   | <b>Key Vocabulary</b> <table> <tr> <td>Interest</td><td>The cost of borrowed money or money paid for saving.</td></tr> <tr> <td>Multiplier</td><td>A value to multiply by.</td></tr> <tr> <td>Percent</td><td>Out of 100.</td></tr> </table>                                                                                                                                                                                                                                                                                    | Interest    | The cost of borrowed money or money paid for saving.                                | Multiplier | A value to multiply by.                             | Percent      | Out of 100.                                           |             |                                       |       |                                      |
| Interest                                                                                                                                                                                                                                                                                                                                                                                                               | The cost of borrowed money or money paid for saving.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Multiplier                                                                                                                                                                                                                                                                                                                                                                                                             | A value to multiply by.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |
| Percent                                                                                                                                                                                                                                                                                                                                                                                                                | Out of 100.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |                                                                                     |            |                                                     |              |                                                       |             |                                       |       |                                      |



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| <b>Composites (Higher Only)</b><br><i>No additional content in this unit</i>                                                                                                                            |                                                                                                                                                                                                                                                                                                            |
| <b>How to help at home</b> <ul style="list-style-type: none"> <li>• <a href="#">Simple Interest Video (Corbett Maths)</a></li> <li>• <a href="#">Compound Interest Video (Corbett Maths)</a></li> </ul> | <b>Careers Links</b><br>These skills are used in careers such as banking, finance, accounting, economics, business, retail and insurance. Professionals use percentages and multipliers to calculate interest, analyse growth and decay, compare prices, forecast trends and manage money and investments. |

| Summer Term                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
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| A7. Using Graphs                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| <b>Composites</b> <ul style="list-style-type: none"><li>• Construct and interpret real-life graphs</li><li>• Construct and interpret distance/time graphs</li><li>• Piece-wise graphs</li><li>• Graphs of direct and inverse proportion</li><li>• Find approximate solutions to equations</li></ul>                                                                                                                     | <b>Key Vocabulary</b> <table><tr><td>Acceleration</td><td>The rate at which an object's velocity changes over time.</td></tr><tr><td>Gradient</td><td>The steepness of a line.</td></tr><tr><td>Proportion</td><td>A relationship that describes how two things change in relation to each other.</td></tr><tr><td>Speed</td><td>The rate at which an object covers distance.</td></tr><tr><td>y-intercept</td><td>The point at which the line crosses the y-axis.</td></tr></table> | Acceleration                                              | The rate at which an object's velocity changes over time. | Gradient | The steepness of a line. | Proportion | A relationship that describes how two things change in relation to each other. | Speed | The rate at which an object covers distance. | y-intercept | The point at which the line crosses the y-axis. |
| Acceleration                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The rate at which an object's velocity changes over time. |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| Gradient                                                                                                                                                                                                                                                                                                                                                                                                                | The steepness of a line.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| Proportion                                                                                                                                                                                                                                                                                                                                                                                                              | A relationship that describes how two things change in relation to each other.                                                                                                                                                                                                                                                                                                                                                                                                       |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| Speed                                                                                                                                                                                                                                                                                                                                                                                                                   | The rate at which an object covers distance.                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| y-intercept                                                                                                                                                                                                                                                                                                                                                                                                             | The point at which the line crosses the y-axis.                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"><li>• Velocity-Time graphs</li><li>• Area Under a Graph (using the trapezium rule for a curve)</li><li>• Instantaneous Change</li></ul>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |
| <b>How to help at home</b> <ul style="list-style-type: none"><li>• <a href="#">Distance-Time Graphs Video (Corbett Maths)</a></li><li>• <a href="#">Real-Life Graphs Video (Corbett Maths)</a></li><li>• <a href="#">Proportion Graphs Video (Corbett Maths)</a></li><li>• <a href="#">Instantaneous Change Video (Corbett Maths)</a></li><li>• <a href="#">Average Rates of Change Video (Corbett Maths)</a></li></ul> | <b>Careers Links</b> <p>These skills are used in careers such as engineering, physics, aviation, automotive design, architecture, data science and meteorology. Professionals use graphs to model motion and change, interpret real-world data, calculate speed and acceleration, analyse trends and estimate quantities such as distance and total change over time.</p>                                                                                                            |                                                           |                                                           |          |                          |            |                                                                                |       |                                              |             |                                                 |



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| <b>G6. Congruence &amp; Similarity</b>                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Composites</b> <ul style="list-style-type: none"> <li>• Enlargements</li> <li>• Similar Shapes</li> <li>• Proving Similarity</li> <li>• Solving Similarity Problems</li> <li>• Congruent Triangles</li> </ul>                                                                                                                                                                                       | <b>Key Vocabulary</b><br>Congruent      The same shape and size<br>Divisor        The number to divide by.<br>Similar         Shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.                                                                                                                                            |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"> <li>• Proving Congruency</li> <li>• Similar Areas</li> <li>• Similar Volumes</li> </ul>                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>How to help at home</b> <ul style="list-style-type: none"> <li>• <a href="#">Enlargements Video (Corbett Maths)</a></li> <li>• <a href="#">Similar Shapes Video (Corbett Maths)</a></li> <li>• <a href="#">Congruent Triangles Video (Corbett Maths)</a></li> <li>• <a href="#">Similar Areas Video (Corbett Maths)</a></li> <li>• <a href="#">Similar Volumes Video (Corbett Maths)</a></li> </ul> | <b>Careers Links</b><br>These skills are used in careers such as architecture, engineering, construction, surveying, product design, graphic design and animation. Professionals use similarity and congruence to create accurate scale drawings, design and test structures, model real objects at different scales, and calculate how area and volume change when shapes are enlarged. |
| <b>G7. Trigonometry</b>                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Composites</b> <ul style="list-style-type: none"> <li>• Labelling triangles (with O/A/H)</li> <li>• Using SOHCAHTOA to find missing sides and angles</li> <li>• Solving multi-step problems</li> <li>• Solving Bearings and Trig problems</li> </ul>                                                                                                                                                | <b>Key Vocabulary</b><br>Adjacent        Next to. (In trig: The side next to the given angle $\theta$ ).<br>Hypotenuse      The longest side on a right-angled triangle. It is always opposite the right angle.<br>Opposite         The side opposite the given angle $\theta$ .                                                                                                         |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"> <li>• Area of a triangle (using trig)</li> </ul>                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                          |



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| <ul style="list-style-type: none"> <li>• Sine Rule</li> <li>• Cosine Rule</li> <li>• Problems in 3D</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>How to help at home</b> <ul style="list-style-type: none"> <li>• <a href="#">Intro to Trig Video (Corbett Maths)</a></li> <li>• <a href="#">Missing Sides Video (Corbett Maths)</a></li> <li>• <a href="#">Missing Angles Video (Corbett Maths)</a></li> <li>• <a href="#">Area of a Triangle Video (Corbett Maths)</a></li> <li>• <a href="#">Sine Rule – Angles Video (Corbett Maths)</a></li> <li>• <a href="#">Sine Rule – Sides Video (Corbett Maths)</a></li> <li>• <a href="#">Cosine Rule – Angles Video (Corbett Maths)</a></li> <li>• <a href="#">Cosine Rule – Sides Video (Corbett Maths)</a></li> <li>• <a href="#">3D Trig Video (Corbett Maths)</a></li> </ul> | <b>Careers Links</b><br>These skills are used in careers such as engineering, architecture, surveying, navigation, aviation, astronomy and construction. Professionals use trigonometry to calculate distances and angles, design structures, solve spatial problems, determine positions and navigate accurately in both 2D and 3D contexts.                                                                                                      |
| <h2 style="text-align: center;">A8a. Representing Solutions</h2>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Composites</b> <ul style="list-style-type: none"> <li>• Represent inequalities on a number line</li> <li>• Form and solve inequalities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Key Vocabulary</b><br><div>           Inequalities      Mathematical relationships that compare two expressions showing if one is greater than, less than or equal to another.         </div> <div>           Solve      To find a numerical value that satisfies a mathematical relationship (makes it true).         </div> <div>           Variable      A letter that represents an unknown number or a changeable quantity.         </div> |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"> <li>• Graphing Inequalities</li> <li>• Regions on a Graph</li> <li>• Quadratic Inequalities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>How to help at home</b> <ul style="list-style-type: none"> <li>• <a href="#">Inequalities on Number Lines Video (Corbett Maths)</a></li> <li>• <a href="#">Solving Inequalities One Sign Video (Corbett Maths)</a></li> <li>• <a href="#">Solving Inequalities Two Signs Video (Corbett Maths)</a></li> <li>• <a href="#">Quadratic Inequalities Video (Corbett Maths)</a></li> </ul>                                                                                                                                                                                                                                                                                         | <b>Careers Links</b><br>These skills are used in careers such as engineering, economics, computer science, operations research and logistics. Professionals use inequalities to model constraints, define feasible regions, optimise solutions, compare limits and make decisions based on boundaries and conditions in real-world problems.                                                                                                       |



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| <b>A8b. Simultaneous Equations</b>                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Composites</b> <ul style="list-style-type: none"><li>• Solving linear simultaneous equations:<ul style="list-style-type: none"><li>- Graphically</li><li>- Using substitution</li><li>- Using elimination</li></ul></li><li>• Forming and solving linear simultaneous equations</li></ul>                                                             | <b>Key Vocabulary</b><br><br>Simultaneous      Occurring at the same time.<br>To find a numerical value that satisfies a mathematical relationship (makes it true).<br><br>Solve                                                                                                                                                                                                                    |
| <b>Composites (Higher Only)</b> <ul style="list-style-type: none"><li>• Solving linear and non-linear simultaneous equations</li></ul>                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>How to help at home</b> <ul style="list-style-type: none"><li>• <a href="#">Solving by Elimination Video (Corbett Maths)</a></li><li>• <a href="#">Solving by Substitution Video (Corbett Maths)</a></li><li>• <a href="#">Solving Graphically Video (Corbett Maths)</a></li><li>• <a href="#">Solving Non-Linear Video (Corbett Maths)</a></li></ul> | <b>Careers Links</b><br>These skills are used in careers such as engineering, physics, economics, computer science, finance and data analysis. Professionals use simultaneous equations to model and solve problems involving multiple variables at the same time, such as balancing supply and demand, analysing intersecting relationships, designing systems and solving real-world constraints. |