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| Year 11 – Foundation Tier | **Topic: Unit 19 – Congruence, Similarity and Vectors**  **Period:** Autumn 1 |
| **Overview of topic:**  Students will build on their knowledge from KS3 and year 10 in dealing with and calculating with vectors, and apply more formal definitions of similarity and congruence whilst appreciating the effect that these terms have on the lengths and angles involved within shapes   * Similarity and Enlargement * Further Similarity * Using Similarity * Congruence * Vectors   In addition to continued study within the scheme of work, year 11 students will complete regular GCSE practice papers and use analysis of those results to inform revision of prior knowledge, tailored to the individual needs of different classes and students. | |
| **Key** **knowledge:**   * Understand similarity as one shape being an enlargement of the other. * Recognise that all corresponding angles in similar shapes are equal in size when the corresponding lengths of sides are not equal in size. * Use 𝐴𝐵 notation for describing lengths and ∠𝐴𝐵𝐶 notation for describing angles. * Using scale diagrams, including bearings and maps, provides a rich source of real-life examples and links to other areas of mathematics. * Know that if one vector is a multiple of the other, they are parallel. * Add and subtract vectors using column vectors. * Investigations involving vectors around 2D shapes such as a square can be extended to include considering the area enclosed in the same shapes.   **Key vocabulary:**   |  |  | | --- | --- | | Tier 2 | Tier 3 | | * Direction * Magnitude * Multiple * Ratio * Side * Angle * Construction * Shape * Volume * Length * Area * Enlargement * Similar * Perimeter | * Vector * Scalar * Parallel * Collinear * Column vector * Congruence * Compasses * Scale factor | | **Key skills:**   * Use the basic congruence criteria for triangles (SSS, SAS, ASA and RHS); * Solve angle problems involving congruence; * Identify shapes which are similar; including all circles or all regular polygons with equal number of sides; * Understand similarity of triangles and of other plane shapes, use this to make geometric inferences, and solve angle problems using similarity; * Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides; * Understand the effect of enlargement on perimeter of shapes; * Solve problems to find missing lengths in similar shapes; * Know that scale diagrams, including bearings and maps are ‘similar’ to the real-life examples. * Understand and use column notation in relation to vectors; * Be able to represent information graphically given column vectors; * Identify two column vectors which are parallel; * Calculate using column vectors, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector. |
| **Co-curricular opportunities:** Similarity underpins the use of scale diagrams which has applications in geography and map reading, architecture, engineering and anywhere else that uses scale drawing to communicate accurately. | **Key reading skills taught and key texts:**  Clarify – identify key vocabulary in questions and be fluent in understanding the meanings  Question – from a worded question, what Maths is required to be done in order to get a solution?  **Wider Reading Opportunities/Links:** |
| **How can I use this information at home?**   * Conversation starters with your children to discuss their learning * Support your child in carrying out independent research around the topic * Visit your local library (or BorrowBox), museums, or other locations to explore the topic * Promote books/other texts that explore this topic (see reading section) * Help your child to learn the key vocabulary * Encourage practice and consolidation through completion of homework, TTRockStars and using other online learning platforms * Encourage them to practice their mathematical skills in a variety of everyday situations wherever the opportunity arises. | |