|  | | **HT1**  **Geometry and Shape & PROBABILITY** | **HT2**  **STATISTICS** | **HT3**  **QLA to inform** | **HT4**  **QLA to inform** | **HT5**  **QLA to inform** |
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| Learning outcomes/ composite knowledge:  Pupils will be able to… | | **LO1: Construction**  Use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); use these to construct given figures and solve loci problems  **LO2: Trigonometry**  To understand and use trigonometry to find missing sides and angles of triangles;  To know exact values for 30, 45 and 60 degrees  **LO3: Probability.**  Understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size;  Enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams;  Construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities;  Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions; | **LO1: Collecting, Representing and Interpreting Data**  Calculate appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers,  Use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing;  **Revision and assessments** | **Curriculum will be tailored to meet the needs of each class based on QLA from assessments. Classroom teachers will provide a half termly plan to the Head of Mathematics** | **Curriculum will be tailored to meet the needs of each class based on QLA from assessments. Classroom teachers will provide a half termly plan to the Head of Mathematics** | **Curriculum will be tailored to meet the needs of each class based on QLA from assessments. Classroom teachers will provide a half termly plan to the Head of Mathematics** |
| Knowledge Components | Declarative knowledge | **LO1:Construction**  I know what is meant by a perpendicular bisector and an angle bisector.  I know the 3 types of loci. **LO2: Trigonometry**  I know the 3 trigonometric functions involving Sine, Cosine and Tangent.  I know exact values for 30, 45 and 60 degrees  **LO3: Probability.**  I know how to recognise independent events and mutually exclusive events. | **LO1: Collecting, Representing and Interpreting Data**  I know the 3 different measures of central tendency.  I know that correlation does not indicate causation; |  |  |  |
| Procedural knowledge | **LO1:Construction**  I can use standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); to construct given figures and solve loci problems.  **LO2: Trigonometry**  I understand and can use trigonometry to find missing sides and angles of triangles;  **LO3: Probability.**  I understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size;  I can enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams;  I know how to construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities;  I can calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions; | **LO1: Collecting, Representing and Interpreting Data**  I can calculate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers)  I can use and interpret scatter graphs of bivariate data;  I can draw estimated lines of best fit; |  |  |  |
| Contextual knowledge | **LO2: Trigonometry**  I can scrutinise a problem and make appropriate choices about whether to use Pythagoras’ Theorem or trigonometry to find missing sides.  **LO3: Probability.**  I can look at a problem and make an accurate choice about whether it is best solved using a Venn Diagram or a 2 way table or a tree diagram. | **LO1: Collecting, Representing and Interpreting Data**  I can calculate appropriate measures of central tendency (median, mean, mode and modal class) and spread.  I can interpret scatter diagrams.  I can make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing; |  |  |  |
| National Curriculum reference | | Use mathematical language and properties precisely;  Extend and formalise their knowledge of ratio and proportion, including trigonometric ratios, in working with measures and geometry, and in working with proportional relations algebraically and graphically;  Extend and formalise their knowledge of ratio and proportion, including trigonometric ratios, in working with measures and geometry, and in working with proportional relations algebraically and graphically;  Reason deductively in geometry, number and algebra, including using geometrical constructions;  Explore what can and cannot be inferred in statistical and probabilistic settings, and express their arguments formally;  Assess the validity of an argument and the accuracy of a given way of presenting information;  Compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios;  Apply Pythagoras’ Theorem and trigonometric ratios to find angles and lengths in right-angled triangles in two dimensional figures ;  Apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one;  Use a probability model to predict the outcomes of future experiments; understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size;  Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions;  Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling; Apply statistics to describe a population; | Use mathematical language and properties precisely;  Explore what can and cannot be inferred in statistical and probabilistic settings, and express their arguments formally; Assess the validity of an argument and the accuracy of a given way of presenting information;  Interpret and construct tables and line graphs for time series data; interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (including modal class) and spread;  Apply statistics to describe a population;  Use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing. |  |  |  |
| * develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems * develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts * make and use connections between different parts of mathematics to solve problems * model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions * select appropriate concepts, methods and techniques to apply to unfamiliar and non- routine problems; interpret their solution in the context of the given problem. | | | | |