|  |  |  |  |
| --- | --- | --- | --- |
| Subject: Mathematics Year 9 Curriculum Map 2024-2025 | | | |
| Terms | **Topics covered** and **core knowledge and skills** | Links to careers | Links to the Knowledge organiser and other additional resources |
| Half term 1 | Fractions, Decimals, Percentages Review:  Understand the connections between methods of calculation for fractions, decimals and percentage  Be able to apply the four operations to fractions, decimals and percentage  Probability:  Understand probability is a numerical measure of chance from 0 to 1 inclusive  Be able to calculate the probability of single independent events  Compare probabilities using a variety of representations  Sets, Venns and Sample Space:  Understand set notation for intersections, unions, complements and the universal set  Be able to identify and interpret sets described by notation and within Venn diagrams  Understand probability from set notation and Venn diagrams  Be able to form and interpret Venn diagrams in the context of probability | Fractions, Decimals, Percentages Review:  Fractions - <https://www.youtube.com/watch?v=3pccvFEWO0k>  Decimals - <https://www.youtube.com/watch?v=X0Gl72XKiyI>  Percentages - <https://www.youtube.com/watch?v=7EB0H1bhGTo>  Probability:  <https://www.youtube.com/watch?v=cJ1QPiGnGEM>  Sets, Venns and Sample Space:  <https://www.youtube.com/watch?v=cJ1QPiGnGEM> | <https://classroom.thenational.academy/subjects-by-key-stage/key-stage-3/subjects/maths>  <https://www.bbc.co.uk/bitesize/subjects/zqhs34j>  <https://vle.mathswatch.co.uk/vle/>  <https://family.eedi.com/login>  <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Unit-1-FDP-Review-KO.pdf>  <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Unit-2-Probability-KO.pdf>  <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/UNit-3-Sets-and-Venn-KO.pdf> |
| Half term 2 | Solving Simultaneous Equations Algebraically:  Be able to solve and manipulate linear equations with one or more variables  Understand how equivalence can be maintained while scaling and rearranging equations  Understand how variables and unknowns interact within a system of equations  Understand that addition and subtraction of simultaneous equations can result in the elimination of a variable  Be able to use equivalent equations – through scaling and rearranging – to solve simultaneous equations  Understand how substitution can be used to manipulate algebra  Be able to reduce the number of variables in an equation through substitution  Solving Simultaneous Equations Graphically:  Understand coordinates as solutions to linear equations, including intersections as simultaneous solutions  Be able to solve simultaneous linear equations graphically  Understand parallel lines have no solution as they do not intersect  Be able to identify whether a pair of simultaneous equations have a solution algebraically and graphically  Connect graphical and algebraic representations of linear relationships | Solving Simultaneous Equations:  <https://www.youtube.com/watch?v=z5p8MQSGh0w> | <https://maritime.rivoagency.com/admin/wp-content/uploads/sites/20/2022/10/Unit-4-and-5-Simultaneous-Equations-KO.pdf> |
| Half term 3 | Angle Review  Understand angle theorems are used to calculate angles without the need to measure  Be able to calculate angles using multiple angle theorems  Experience justifying deductions using a chain of reasoning  Constructions, Congruence and Loci  Understand that circles can be used to draw the locus of points that are a given distance from a point  Be able construct perpendicular and angle bisectors  Experience constructing perpendicular and angle bisectors within a geometric problem  Understand congruency conditions for triangles  Be able to identify when two triangles are congruent  Experience using congruent triangles to prove other geometric results  Pythagoras’ Theorem  Understand that radical notation can be used to describe slanted non-integer lengths and how this relates to squares and right-angled triangles  Be able to find any missing length of a right-angled triangle using by knowing that the square of the hypotenuse is equal to the sum of the squares of the other two sides  Ratio Review  Understand ratios describe proportional relationships  Be able to describe proportional relationships using ratios and fractions  Experience using scale factors, constants of proportionality and unit ratios to solve problems | Angle Review:  <https://www.youtube.com/watch?v=S-Xx22DaOvE>  Constructions, Congruence and Loci:  <https://www.youtube.com/watch?v=w9K7P383cXs>  Pythagoras’ Theorem:  <https://www.youtube.com/watch?v=KY8rRWvmt5c>  Ratio Review:  <https://www.youtube.com/watch?v=BU9mKIvfxYU> |  |
| Half term 4 | Similarity and Enlargement  Understand angles do not change and proportions remain constant in similar shapes  Be able to find scale factors and constants of proportionality and use them to find missing side lengths  Experience recognising and visualising congruent and similar shapes  Understand the constant of proportionality is a relationship within a shape and the scale factor is a relationship between shapes  Understand the centre of enlargement (CoE) determines the position of an enlarged shape  Be able to enlarge a shape from a given CoE and on a coordinate grid and find the CoE  Understand the relationship between the area of an enlarged shape and the scale factor  Trigonometry  Understand that every right-angled triangle is similar to a right-angled triangle drawn within a unit circle.  Be able to find the length of side in right-angled triangle given an angle and the length of the hypotenuse using the sine and cosine functions  Understand that the relationship between the opposite and adjacent is held constant by a set angle  Be able to directly find the length of the opposite from the adjacent and given angle (and vice versa)  Be able to find any angle in a right-angled triangle from two known side lengths. | Similarity and Enlargement:  <https://www.youtube.com/watch?v=Mz4nMRtTDCw>  <https://www.youtube.com/watch?v=ejuJ20JroTo>  Trigonometry:  <https://www.youtube.com/watch?v=v62GGaDpk9Q> |  |
| Half term 5 | Algebra Review  Understand algebraic conventions​  Be able to manipulate algebraic expressions by expanding brackets and simplifying or factorising​  Experience multiple representations of algebraic structures  Understand a variable can take any value whilst an unknown has a fixed value (or values)​  Be able to evaluate expressions, solve single variable equations, and represent equations with 2 variables graphically​  Experience the effect of changing the order of operations on the value of an expression​  Quadratic Expressions and Equations  Understand that quadratics are expressions and equations that include a squared variable (and no higher order power)​  Understand that the shape of a quadratic graph is different from a linear graph​  Be able to evaluate quadratic expressions for a given value, and use these values to plot graphs of quadratic equations ​  Understand that quadratic graphs can be used to give us information about and values  Understand that every -value can be mapped to a single -value but **not** the other way around  Understand that quadratics can be written in a factorised form, expressed as two brackets  Be able to expand double brackets with coefficients of 1 and positive constants  Understand expanding brackets as a multiplication of two partitioned numbers and use models of multiplication to find quadratics and other polynomials in their standard form  Be able to expand double brackets including those with negatives and non-1 coefficients  Experience different representations of quadratics and spot patterns in how the algebraic forms relate to graphical forms | Algebra:  <https://www.youtube.com/watch?v=c4xwvFtsrMU>  Quadratic Equations:  <https://www.youtube.com/watch?v=QAmbU12zs8c> |  |
| Half term 6 | Surds  Understand surd notation​  Be able to identify and begin to manipulate surds​  Experience surds in other mathematical contexts​  Indices  Understand index notation and what it represents​  Understand how we can expand our understand on indices to integers less than 1​  Be able to write numbers in index form in decimal and fractional forms​  Understand the 3 main index laws – multiplication, division, and powers – and use the expanded form to demonstrate the generalisations​  Be able to simplify expressions involving indices with the same base​  Standard Form  Understand standard form is where and is an integer  Be able to interpret numbers in standard form and convert between ordinary and standard forms  Experience problem solving with very large and very small numbers  Growth and Decay  Understand repeated percentage change results in a different amount of change each iteration  Be able to use decimal multipliers to calculate change, forwards and backwards  Experience real-life contexts of growth and decay represented numerically and graphically | Approximation:  <https://www.youtube.com/watch?v=cABMOLgTkYM>  Powers and Roots:  <https://www.youtube.com/watch?v=I95Nw1Pwl7c>  Standard Form:  <https://www.youtube.com/watch?v=gjeoyUHoy3Q>  Percentages:  <https://www.youtube.com/watch?v=7EB0H1bhGTo> |  |