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| 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 percentageBe able to apply the four operations to fractions, decimals and percentageProbability:Understand probability is a numerical measure of chance from 0 to 1 inclusiveBe able to calculate the probability of single independent eventsCompare probabilities using a variety of representationsSets, Venns and Sample Space:Understand set notation for intersections, unions, complements and the universal setBe able to identify and interpret sets described by notation and within Venn diagramsUnderstand probability from set notation and Venn diagramsBe 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 variablesUnderstand how equivalence can be maintained while scaling and rearranging equationsUnderstand how variables and unknowns interact within a system of equationsUnderstand that addition and subtraction of simultaneous equations can result in the elimination of a variableBe able to use equivalent equations – through scaling and rearranging – to solve simultaneous equationsUnderstand how substitution can be used to manipulate algebraBe able to reduce the number of variables in an equation through substitutionSolving Simultaneous Equations Graphically:Understand coordinates as solutions to linear equations, including intersections as simultaneous solutionsBe able to solve simultaneous linear equations graphicallyUnderstand parallel lines have no solution as they do not intersectBe able to identify whether a pair of simultaneous equations have a solution algebraically and graphicallyConnect 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 ReviewUnderstand angle theorems are used to calculate angles without the need to measureBe able to calculate angles using multiple angle theoremsExperience justifying deductions using a chain of reasoningConstructions, Congruence and LociUnderstand 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 bisectorsExperience constructing perpendicular and angle bisectors within a geometric problemUnderstand congruency conditions for trianglesBe able to identify when two triangles are congruentExperience using congruent triangles to prove other geometric resultsPythagoras’ TheoremUnderstand that radical notation can be used to describe slanted non-integer lengths and how this relates to squares and right-angled trianglesBe 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 sidesRatio ReviewUnderstand ratios describe proportional relationships Be able to describe proportional relationships using ratios and fractionsExperience 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 EnlargementUnderstand angles do not change and proportions remain constant in similar shapesBe able to find scale factors and constants of proportionality and use them to find missing side lengthsExperience recognising and visualising congruent and similar shapesUnderstand the constant of proportionality is a relationship within a shape and the scale factor is a relationship between shapesUnderstand the centre of enlargement (CoE) determines the position of an enlarged shapeBe able to enlarge a shape from a given CoE and on a coordinate grid and find the CoEUnderstand the relationship between the area of an enlarged shape and the scale factorTrigonometryUnderstand 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 functionsUnderstand that the relationship between the opposite and adjacent is held constant by a set angleBe 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 ReviewUnderstand algebraic conventions​Be able to manipulate algebraic expressions by expanding brackets and simplifying or factorising​Experience multiple representations of algebraic structuresUnderstand 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 EquationsUnderstand 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 $x$ and $y$ valuesUnderstand that every $x$-value can be mapped to a single $y$-value but **not** the other way aroundUnderstand that quadratics can be written in a factorised form, expressed as two bracketsBe able to expand double brackets with $x$ coefficients of 1 and positive constantsUnderstand expanding brackets as a multiplication of two partitioned numbers and use models of multiplication to find quadratics and other polynomials in their standard formBe able to expand double brackets including those with negatives and non-1 $x$ coefficientsExperience 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 | SurdsUnderstand surd notation​Be able to identify and begin to manipulate surds​Experience surds in other mathematical contexts​IndicesUnderstand 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 FormUnderstand standard form is $a×10^{b}$ where $1\leq a<10$ and $b$ is an integerBe able to interpret numbers in standard form and convert between ordinary and standard formsExperience problem solving with very large and very small numbersGrowth and DecayUnderstand repeated percentage change results in a different amount of change each iterationBe able to use decimal multipliers to calculate change, forwards and backwardsExperience 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> |  |