



Denton Community College
Departmental Curriculum Map
Subject: Maths



Year Group: 9

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	Reasoning with Algebra	Constructing in 2 and 3 Dimensions	Reasoning with Number	Reasoning with Geometry	Reasoning with Proportion	Representations
What will students be learning during this unit?	<p>Students will be expected to recognise and draw lines parallel to the axes.</p> <p>Students will be expected to use table of values to plot both linear and non linear graphs.</p> <p>Students will be exploring the gradient and y-intercept of linear equations.</p> <p>Students will be learning to solve one and two step equations/inequalities, unknowns on both sides and equations in context.</p>	<p>Students will be expected to name 2-D and 3-D shapes, recognise prisms, draw plans and elevations and be able to draw nets of 3-D shapes.</p> <p>Students will be able to find the area of 2-D shapes and surface area and volume of 3-D shapes.</p> <p>Students will be expected to draw and measure angles.</p> <p>Students will be able to find the locus of distance from a point, line, and to construct the perpendicular bisector and angle bisector.</p>	<p>Students will be able to solve problems with integers and decimals.</p> <p>Students will be able to do calculations with the 4 rules of fractions (Adding, subtracting, multiplying and dividing).</p> <p>Students will be expected to find the highest common factor and lowest common multiple of pairs of numbers.</p> <p>Students will be expected to work with percentages</p>	<p>Students will be expected to find missing angles on parallel lines, and use a chain of reasoning to solve angle problems, both numerically and algebraically.</p> <p>Students are to be able to work out the rotational symmetry of shapes.</p> <p>Students will be expected to translate and rotate shapes, as well as describing shapes that have been translated or rotated.</p> <p>Students will be expected to use Pythagoras' Theorem to find missing lengths of a right angle triangle (hypotenuse and shorter sides), and to determine whether a</p>	<p>Students are expected to enlarge a shape with a positive and negative scale factor from a centre point.</p> <p>Students are expected to solve problems with direct proportion, conversion graphs, and inverse proportion. Students must also recognise graphs that show both direct and inverse proportion.</p> <p>Students will be able to solve ratio problems both finding a part or a whole, best buy problems and problems involving algebra.</p> <p>Students will be expected to solve speed, distance, time questions both with</p>	<p>Students are expected to find the probability of single events, relative frequency,, expected outcomes.</p> <p>Students are expected to complete probability tree diagrams and use them to find a given probability (with and without replacement).</p> <p>Students should be able to draw and interpret quadratic graphs.</p> <p>Students are expected to recognise linear, quadratic, cubic and reciprocal graphs.</p>

	Students will be learning to rearrange formula.		to find percentage of amounts, increase/decrease, percentage change and generally recognising and solving percentage problems.	triangle is right angled or not.	and without a calculator, use distance time graphs, solve mass, density, volume problems and convert compound units.	
When will students be assessed?	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.	Students will be given CABs after each component of learning. Students will have a pre test at the beginning of the half term and a post test at the end of the half term.
How will students be assessed?	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic	CABs are used at the end of each small step Pretests are used before the the topic starts Post-tests are used at the end of the topic
Key Vocabulary	Parallel, Horizontal, Vertical, Straight Line, Graph, Axis, Equation, Linear, Table of Values, Gradient, Slope, Negative, Positive, Parallel, Intercept, y-axis, Reciprocal, Negative Reciprocal	Dimensions, Cube, Cuboid, Cone, Sphere, Pyramid, Face, Edge, Vertex, Polygon, Prism, Cross Section, Net, Area, Elevation, Solid, Perpendicular Height, Units, Circumference, Surface area, Pi	Integer, Real, Rational, Irrational, Square root, Cube root, Surd, Simplify, Positive, Negative, Inverse, Directed, Product, Sum, Difference, Factor, Multiple, Numerator, Denominator, HCF,	Alternate, Corresponding, Co-interior, Vertically Oposite, Transversal, Parallel, Isosceles, Interior, Exterior, Regular, Equation, Polygon, Sum, Total, Parallelogram, Rhombus, Kite, Shape, Rotational, Symmetry, Regular, Irregular,	Similar, Ratio, Enlargement, Scale Factor, Corresponding, Object, Image, Centre, Inverted, Negative, Hypotenuse, Constant, Multiplier, Relationship, Linear, Non-Linear, Gradient, Variable, Proportional, Inverse,	Event, Outcome, Probability, Biased, Fair, Experiment, Trial, Relative Frequency, Independent, Venn Diagrams, Sample Space, Intersection, Two way table, Union, Quadratic, Parabola, Curve, Vertex, Turning point, Symmetry, Intersection, Solution, Simultaneous.

			LCM, Fraction, Decimal, Percentage, Convert, Equivalent	Clockwise, Anti-clockwise, Pythagoras, Hypoteneuse	Speed, Distance, Time, Average, Origin, Axes	
Homework opportunities to broaden or deepen student knowledge	Mathswatch: Straight Line Graphs, Drawing Quadratic Graphs, The gradient of a line, sketching functions	Mathswatch: Naming Shapes, Area of rectangles/triangles/trapezium, surface area of prisms, loci, perpendicular bisectors.	Mathswatch: Adding and Subtracting Fractions, Multiplying and Dividing Fractions, Percentage of Amounts, Percentage Increase/Decrease, Percentage Change, Factors, Multiples, HCF, LCM	Mathswatch: Angles in parallel lines, Angles in Polygons, Pythagoras	Mathswatch: Enlargement from a point, Enlargement with negative scale factor, Direct Proportion, Inverse Proportion, Conversion Graphs, Value for Money, Speed, Distance Time, Mass, Density and Volume.	Mathswatch: Probability, Probability Tree Diagrams, Draw Quadratic Graphs, Reciprocal Graphs, Simultaneous Equations
Links to the National Curriculum	Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions. Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling using equations in x and y and the cartesian plane. Interpret mathematical relationship both	Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes. Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D. Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of	Use the four operations including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative. Use the concepts and vocabulary of prime numbers, factors, multiples, common factors, common multiples, highest common factor, lowest common multiple,	Derive and use the standard ruler and compass constructions; recognise and use the perpendicular distance from a point to a line as the shortest distance to the line. Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric. Apply the properties of angles at a point, angles	Construct similar shapes by enlargement, with and without coordinate grids. Use scale factors, scale diagrams and maps. Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides. Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction. Use Pythagoras' Theorem and trigonometric ratios in similar triangles to	Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale. Understand that the probabilities of all possible outcomes sum to 1. Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams. Generate theoretical sample spaces for single and combined events with equally likely, mutually

	<p>algebraically and graphically. Reduce a given linear equation in two variables to the standard form $y = mx + c$, calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically. Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations. Move freely between different numerical, algebraic, graphical and diagrammatic representations. Use algebraic methods to solve linear equations in one variable. Understand and use standard mathematical</p>	<p>cuboids and other prisms. Draw and measure line segments and angles in geometric figures, including interpreting scale drawings. Derive and use the standard ruler and compass constructions; recognise and use the perpendicular distance from a point to a line as the shortest distance to the line. Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric. Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles.</p>	<p>prime factorisation, including using product notation and the unique factorisation property. Interpret and compare numbers in standard form. Appreciate the infinite nature of the sets of integers, real and rational numbers. Define percentage as “number of parts per hundred”, interpret percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%. Interpret fractions and percentages as operators. Solve problems involving</p>	<p>at a point on a straight line, vertically opposite angles. Understand and use the relationship between parallel lines and alternate and corresponding angles. Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures. Describe, sketch and draw using conventional terms and notations. Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. Use Pythagoras’ Theorem to solve problems involving right-angles triangles. Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras’ Theorem, and use known results to obtain simple proofs. Interpret mathematical relationships both</p>	<p>solve problems involving right-angled triangles. Divide a given quantity into two parts in a given part: part or part: whole ratio; express the division of a quantity into two parts as a ratio. Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction. Solve problems involving direct and inverse proportion, including graphical and algebraic representations. Use compound units such as speed, unit pricing and density to solve problems. Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction. Change freely between related standard units.</p>	<p>exclusive outcomes and use these to calculate theoretical probabilities. Recognise, sketch and produce graphs of quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane. Use quadratic graphs to estimate values of y for given values of x and vice versa. Find approximate solutions to contextual problems from given graphs of a variety of functions, including exponential and reciprocal graphs. Use linear graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous equations.</p>
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	formulae, rearrange formulae to change the subject. Model situations or procedures by translating them into algebraic expressions or formulae, and by using graphs.		percentage change, including percentage increase, decrease and original value problems and simple interest in financial mathematics. w	algebraically and geometrically.		
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