Denton Community College

Departmental Curriculum Map

Subject: Mathematics Year Group: 8

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	Proportional Reasoning	Representations	Algebraic Techniques	Developing Number	Developing Geometry	Reasoning with Data
What will students be learning during this unit?	Students will be expected to understand the meaning and representation of ratio, divide into a given ratio and simplify ratios. Students will be expected to explore conversion graphs, convert between different currencies and understand scale factors as multiplicative representations. Students will be expected to represent multiplication of fractions, find the product of any fractions, and divide	Students will be expected to work with co-ordinates in all 4 quadrants, identify parallel lines to the axis and to use lines in the for y = x and y = kx. Students will be exploring the gradient (both positive and negative) and y intercept of different lines. Students will be expected to plot graphs and to be able to link graphs to linear sequences. Students will be shown ways of representing data such as two way tables, frequency trees, venn	Students will be expected to combine terms to form expressions using directed numbers. Students will be expected to multiply a number of terms within a bracket by a constant, a variable or a term. Students will be shown how to write inequalities in algebraic form, collect like terms and find the value of the unknown. Students will be expected to distinguish between expressions, equations, formulas and identities.	Students will be able to convert fluently between fractions, decimals and percentages. Students will be expected to find the percentage and fractions of amounts both with and without a calculator. Students will be able to use a multiplier to increase/decrease by a percentage. Students will be exploring and investigating positive and negative powers of 10 leading to the introduction of writing numbers using standard form.	Students will be expected to understand basic angle rules and notation. Students will investigate angles in parallel lines. Students will be using what they know about measuring and drawing angles to be able to draw different types of triangles. Students will be expected to find the area of triangles, rectangles, parallelograms, trapezia and circles. Students will be able to recognise symmetry and be expected to	Students will be expected to make their own questionnaires and to be able to criticise incorrect questionnaires. Students will be able to write up their results from their questionnaires and to represent them in charts such as bar charts, line charts and pie charts. Students will be expected to be able to find the range of a set of data and be able to explain what this is showing them.

	fractions by integers and fractions.	diagrams and sample space diagrams.	Students will be simplifying expressions containing indices using multiplication and division.	Students will be able to round numbers to power of 10, significant figures and decimal places and then use that to estimate the answer to given calculations.	reflect shapes in a given mirror line.	
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	Ratio, Share, Unit Ratio, Unit Fraction, Simplify,Direct Proportion,Proportional, Scale Factor, Scale, Exchange Rates, Unit Conversions,Numerator,Denominator, Integer, Reciprocal	Cartesian, Co-ordinate, Quadrant,Parallel,Gradient,Line segments, Linear and non-Linear, Correlation,Frequency, Discrete,Data,Interpret,Probabilities	algebra, expression, equation, expand, fatorise, simply, form, solve, brackets, inequalities, binomials, sequences, nth term, indices	Significant Figures Negatives Estimate Fractions, Decimals, Percentages Mixed Numbers Improper Fractions Multiplier Indices Standard Form Error Intervals	Adjacent, Vertically Opposite, Parallel, Straight Line, Acute, Obtuse, Reflex, Right angle, Transversal, Alternate, Corresponding, Co-Interior, Isosceles, Equilateral, Scalene, Triangle	Hypothesis, Investigation, Sample, Questionnaire, Design, Biased, Pictogram, Bar Chart, Tally Chart, Line Chart, Frequency, Scale, Axis, Comparison, Pie Chart, Fraction, Proportion, Discrete, Continuous, Range

Homework opportunities to broaden or deepen student knowledge	Mathswatch: Introduction to Ratio, Sharing a ratio, Using Ratio for recipes, Ratio Fractions and Graphs, Multiplying Fractions, Dividing Fractions	Mathswatch: Co-ordinates, Two Way Tables, Venn Diagrams, Sample Space Diagrams	Mathswatch: Introduction to algebraic conventions, simplifying addition and subtraction, simplifying multiplication and division, expanding brackets, simple factorisation, substitution	Mathswatch: Fractions, Decimals, Percentages, Percentage of Amounts, Percentage Increase/Decrease, Percentage Change, Rounding, Standard Form	Mathswatch: Angles in parallel lines, area of a triangle, area of a rectangle, area of a parallelogram, area of a trapezium, area of a circle, reflection	Mathswatch: Tally Charts, Pie Charts, Vertical Line Charts, Pictograms
Links to the National Curriculum	To interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning To extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically, to change freely between related standard units To use scale factors, scale diagrams and maps, to express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1	Move freely between numerical, algebraic, graphical and diagrammatic representations. Developing algebraic and graphical fluency, including understanding linear functions; making connections between number relationships, and their algebraic and graphical representations. Students will then be introduced to bivariate data and the idea of linear correlation. Students will be able to describe, interpret and compare observed distributions of a single variable through: appropriate graphical	Form algebraic expressions, use directed number, expand, factorise, simply, form and solve equations using brackets, form and solve inequalities, expand binomials, generate sequences and find the nth term, simplify expressions using addition subtraction, multiplication and division of indices.	Understand and use place value for decimals, measures and integers of any size Use the four operations, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative Recognise and use relationships between operations including inverse operations Use integer powers and associated real roots (square, cube and higher) r Recognise powers of 2, 3, 4, 5 Interpret and compare numbers in standard form A x 10n, 1≤A<10, where n is a positive	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles. Understand and use the relationship between parallel lines and alternate and corresponding angles. Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons. Use the standard conventions for labelling the sides and angles of triangle ABC. Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example,	describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers). construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped

	To use ratio notation, including reduction to simplest form To 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 To understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction To relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions To solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics To solve problems involving direct and inverse proportion, including graphical and algebraic representations To use compound units such as speed,	representation involving discrete, continuous and grouped data. Students will then consider sample spaces in representing variables in their tables.		or negative integer or zero Define percentage as 'number of parts per hundred' Interpret percentages and percentage changes as a fraction or a decimal Express one quantity as a percentage of another Compare two quantities using percentages and work with percentages greater than 100% Use standard units of mass, length, time, money and other measures, including with decimal quantities Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] Use approximation through rounding to estimate answers and identify error intervals	equal lengths and angles] using appropriate language and technologies. Derive and use the standard ruler and compass constructions (H only). Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia. Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes. 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. Identify properties of, and describe the results of reflections applied to given figures	and grouped numerical data. describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).

	unit pricing and density to solve problems. (National Curriculum - Ratio, proportion and rates of change)					