Ifield Community College
Mathematics Department

Head of Department: MFO
Key Stage Co-ordinators: DKI, OPE
Teachers: LDA, SDA, DGA, LRA, HRI, TST, ATU

Year 10 Foundation Curriculum Overview **Subject: Mathematics**

Year 10 Overview:

In year 10 students apply the knowledge learnt in previous years and apply to worded and multi-concept problems. Algebra and Ratio & Proportion are common topics throughout.

Autumn Term

Outline of Key Learning	Unit Code
Perimeter & Area a. Find the area and perimeter of parallelograms and trapezia b. Find the area and perimeter of compound shapes c. Calculate areas and perimeters of compound shapes made from triangles and rectangles d. Estimate surface areas by rounding measurements to 1 significant figure e. Find the surface area of a prism	8a
Indices & Standard form a. Find the reciprocal of an integer, decimal or fraction b. Use numbers raised to the power zero, including the zero power of 10 c. Convert large and small numbers into standard form and vice versa d. Add and subtract numbers in standard form e. Multiply and divide numbers in standard form	18a 18b
Graphs a. Draw straight line graphs for real-life situations, conversion graphs, fuel bills graphs, fixed charge and cost per unit b. Draw distance–time graphs and velocity–time graphs c. Work out time intervals for graph scales d. Plot and draw graphs of straight lines of the form y = mx + c using a table of values; e. Sketch a graph of a linear function, using the gradient and y-intercept f. Find the equation of a straight line from a graph	9a 9b

Multiplicative reasoning a. Understand and use compound measures: density, pressure and speed b. calculate average speed, distance, time – in miles per hour as well as metric measures c. use kinematics formulae to calculate speed, acceleration (with formula provided and variables defined in the question) d. Find the original amount given the final amount after a percentage increase or decrease; e. Use compound interest	14

Spring Term	
Outline of Key Learning	**Unit Code**
Statistics a. Understand sample and population b. Calculate the mean, mode, median and range for discrete data c. Can interpret and find a range of averages from a (discrete) frequency table, from grouped data frequency table, from a bar chart, and from stem and leaf diagrams d. Recognise the advantages and disadvantages between measures of average	7a 7b
Ratio & Proportion a. Share a quantity in a given ratio including three-part ratios b. Solve a ratio problem in context: use a ratio to find one quantity when the other is known, use a ratio to compare a scale model to a real-life object and use a ratio to convert between measures and currencies c. Write lengths, areas and volumes of two shapes as ratios in simplest form d. Solve proportion problems using the unitary method e. Solve word problems involving direct and inverse proportion f. Work out which product is the better buy	11a 11b

Transformations a. Rotate a shape about the origin or any other point on a coordinate grid b. Find the centre of rotation, angle and direction of rotation and describe rotations c. Translate a given shape by a vector d. Transform 2D shapes using single reflections e. Enlarge a given shape using (0, 0) as the centre of enlargement, and enlarge shapes with a centre other than (0, 0) f. Find the centre of enlargement by drawing	10a 10b
Similarity a. Identify shapes which are similar; including all circles or all regular polygons with equal number of sides b. Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides c. Solve problems to find missing lengths in similar shapes	19a

Summer Term	
Outline of Key Learning	**Unit Code**
Pythagoras & Trigonometry a. Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid b. Calculate the length of a line segment AB given pairs of points c. Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures d. Use the trigonometric ratios to solve 2D problems e. Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan θ for θ = 0°, 30°, 45° and 60°	12

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3D forms & Volume a. Calculate volumes of right prisms and shapes made from cubes and cuboids b. Convert between metric volume measures c. Convert between metric measures of volume and capacity e.g. 1ml = 1cm³ d. Make accurate drawings of triangles and other 2D shapes using a ruler and a protractor e. Understand and draw front and side elevations and plans of shapes made from simple solids f. Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid	8b 15a
Quadratics a. Square a linear expression, e.g. $(x + 1)^2$ b. Factorise quadratic expressions of the form x2 + bx + c c. Factorise a quadratic expression $x^2 – a^2$ using the difference of two squares d. Solve quadratic equations by factorising e. Generate points and plot graphs of simple quadratic functions, then more general quadratic functions f. Identify the line of symmetry of a quadratic graph g. Find approximate solutions and turning points to quadratic equations using a graph	16a 16b