Year 10 Foundation A Scheme of Work Overview

-1st Half Term	**A - Graphs** 1. Draw and describe lines parallel to the axes; y = a, x = -b etc, plus y = x and y = -x. 2. Recap drawing the graph of a linear function by drawing a table and substituting values of x in (from yr 8). 3. Begin to look for links between straight line graphs – y-intercept and gradient. 4. Draw a straight line graph from gradient and y-intercept. 5. Find the equation of a straight line graph from gradient and y-intercept. 6. Draw the graph of a quadratic function by drawing a table and substituting a value of x to get co-ordinates.	**B - Handling Data – Averages & spread** 1. Understand the different types of data and how to manipulate each sort. 2. Recap calculating the mean, median, mode and range for a small set of discrete data; use these to make comparisons between 2 sets of data. 3. Recognise the advantages and disadvantages between measures of average. 4. Calculate the averages for data presented in different charts. 5. Recap constructing and interpreting stem & Leaf diagrams (including back to back diagrams) - calculate the median and mode from the diagram, compare 2 sets of data represented in stem and leaf diagrams. 6. Calculate the mean, median, mode and range for a set of data represented in a frequency table; use these to make comparisons between 2 sets of data. 7. Calculate an estimated mean for continuous grouped data.
2nd Half Term	**Transformations** 1. Reflect 2-d shapes on a set of axes in lines such as y = 3, x = -2, y = x and y = -x. 2. Rotate 2-d shapes on a set of axes (use tracing paper) 3. Translate 2-d shapes by a given vector. 4. Enlarge a given shape from a centre and a scale factor (including fractional scale factors). 5. Describe transformations that have happened. 6. Describe and transform 2-d shapes using combined transformations.	**B - Ratio and Proportion** 1. Recap ratio skills taught in years 7 and 8; simplifying a ratio, sharing an amount in a given ratio (both sorts). 2. Write ratios in the form 1:m or m:1. 3. More complex ratio questions – in particular questions that involve scaling up ratios to get equivalent ratios or questions that link ratio to fractions.
3rd Half Term	**Proportion** 1. Work out which product is the better value – both with and without a calculator 2. Scale up/down recipes – both with and without a calculator. 3. Convert between different currencies. 4. Solve proportion problems using the unitary method.	**A - Pythagoras and Trigonometry** 1. Use Pythagoras' Theorem to find the length of missing sides in a right angled triangle. 2. Use Pythagorean triples. 3. Apply Pythagoras to a practical context – ladders, scaffolding etc. 4. Use Trigonometry to find missing angles and missing sides in right angled triangles. 5. Apply Trigonometry to a practical context.

Year 10 Foundation A Scheme of Work Overview

4th Half Term	**Probability** 1. Recap probability from years 7 & 8; theoretical probability of simple events, probabilities sum to 1, experimental probability, sample space diagrams for combined events. 2. Work out probabilities from frequency tables, frequency trees and two way tables. 3. Find a missing probability from a list or table including algebraic terms. 4. Calculate expected outcomes for an event. 5. List all outcomes for combined events systematically. 6. Calculate probabilities from venn diagrams. 7. Draw/complete a tree diagram to represent independent events. 8. Use the 'and' 'or' rules in conjunction with a tree diagram to calculate probabilities.	**Multiplicative Reasoning** 1. Recap % work from year 9; finding a % of a quantity with a calculator, finding a % increase/decrease using a multiplier, writing one number as a % of another. 2. Find repeated percentage changes using a multiplier and a power. 3. Calculate percentage profit and loss. 4. Find the original amount after a percentage increase/decrease (reverse %) 5. Calculate compound measures and use their units (speed, density & pressure) 6. Begin to convert between compound units.
5th Half Term	**Plans & Elevations** 1. Accurately draw lines, angles, circles and arcs. 2. Make accurate drawings of triangles and other 2-d shapes using a ruler and protractor. 3. Know the terms face, edge and vertex in relation to 3-d solids. 4. Sketch 3-d solids, use isometric grids to make 2-d sketches of 3-d shapes. 5. Interpret and draw front, side and plan elevations of 3-d shapes. 6. Given the elevations of a solid draw a sketch of the 3-d solid.	**Constructions, loci & bearings** 1. Calculate bearings, draw bearings and solve bearings problems on scale drawings. 2. Understand congruence and visually identify congruent shapes. 3. Recap the standard ruler & compass constructions (from yr 8) 4. Complete the constructions relevant to loci; a fixed distance from a point, equidistant from 2 points, equidistant from 2 lines, fixed distance from a line. 5. Find points and shade regions satisfying a combination of loci.
6th Half Term	**Quadratic Equations** 1. Expand and simplify a pair of brackets to form a quadratic expression. 2. Factorise a quadratic expression – co-eff of $x^2 = 1$ 3. Factorise using the difference of 2 squares. 4. Use the above 2 to factorise and then solve a quadratic equation. 5. Generate points and plot graphs of quadratic functions. 6. Find approximate solutions to a quadratic equation using a graph.	**Revision/Recap** **This rest of this half term is to be used to finish any topics not covered, revise/prepare for yr 10 exams and then to address topics that are highlighted as a weakness during the yr 10 exams.**

Year 10 Foundation B Scheme of Work Overview

-1st Half Term	**A – Graphs** 1. Accurately draw, label and scale axes. 2. Identify and plot points in all 4 quadrants using co-ordinates. 3. Draw & interpret straight line graphs for real life situations – conversion graphs, phone bills, fixed charge and cost per item. 4. Draw and interpret distance/time and velocity/time graphs.	**B - Handling Data – Averages & spread** 1. Understand the different types of data and how to manipulate each sort. 2. Reteach calculating the mean, median, mode and range for a small set of discrete data; use these to make comparisons between 2 sets of data. 3. Recognise the advantages and disadvantages between measures of average. 4. Constructing and interpreting stem & Leaf diagrams - calculate the median and mode from the diagram.
2nd Half Term	**Transformations** 1. Reflect 2-d shapes on a set of axes in given mirror lines. 2. Rotate 2-d shapes on a set of axes (use tracing paper) 3. Translate 2-d shapes by a given vector. 4. Enlarge a given shape from a centre and a scale factor (including fractional scale factors). 5. Describe transformations that have happened.	**B - Ratio and Proportion** 1. Simplify a ratio. 2. Share an amount in a given ratio. 3. Write ratios in the form 1:m or m:1. 4. Write a ratio as a fraction and vice versa.
3rd Half Term	**Proportion** 1. Work out which product is the better value – both with and without a calculator 2. Scale up/down recipes – both with and without a calculator. 3. Convert between different currencies. 4. Solve proportion problems using the unitary method.	**Probability** 1. Reteach probability from years 7 & 8;probability scale, theoretical probability of simple events, probabilities sum to 1, experimental probability, 2. Work out probabilities from frequency tables, frequency trees and two way tables. 3. Calculate expected outcomes for an event. 4. List all outcomes for combined events systematically.

Year 10 Foundation B Scheme of Work Overview

4th Half Term	**Plans & Elevations** 1. Accurately draw lines, angles, circles and arcs. 2. Make accurate drawings of triangles and other 2-d shapes using a ruler and protractor. 3. Know the terms face, edge and vertex in relation to 3-d solids. 4. Sketch 3-d solids, use isometric grids to make 2-d sketches of 3-d shapes. 5. Interpret and draw front, side and plan elevations of 3-d shapes. 6. Given the elevations of a solid draw a sketch of the 3-d solid.	**Constructions, loci & bearings** 1. Calculate bearings, draw bearings and solve bearings problems on scale drawings. 2. Understand congruence and visually identify congruent shapes. 3. Use a ruler and compasses to; bisect a line and bisect an angle. 4. Complete the constructions relevant to loci; a fixed distance from a point, equidistant from 2 points, equidistant from 2 lines, fixed distance from a line. 5. Find points and shade regions satisfying a combination of loci.
5th Half Term	**Circles** 1. Identify name and draw parts of a circle – radius, diameter, circumference and chord. 2. Find the circumference of a circle 3. Find the area of a circle	**B – Fractions, decimals & percentages Taught in year 9 - revisit** 1. Find equivalent fractions, cancel fractions fully and convert between mixed number and improper fractions. 2. Add, subtract, multiply and divide fractions – including mixed numbers. 3. Express one number as a fraction and percentage of another. 4. Calculate a percentage of a quantity without a calculator - % multiples of 5%. 5. Calculate a percentage of a quantity using a calculator – by first changing the % into a decimal. 6. Calculate % increase and decrease – by first finding the % then either adding on or taking away.
6th Half Term		

Year 10 Foundation B Scheme of Work Overview

Year 10 Higher A Scheme of Work Overview

-1st Half Term	**Transformations – although these topics have been taught in the 6th HT of yr 8 they are high frequency exam questions which pupils regularly make mistakes on hence we will reteach not just recap.** 1. Reflect 2-d shapes on a set of axes in lines such as y = 3, x = -2, y = x and y = -x. 2. Rotate 2-d shapes on a set of axes (use tracing paper)	3. Translate 2-d shapes by a given vector. 4. Enlarge a given shape from a centre and a scale factor including fractional and negative scale factors. 5. Describe transformations that have happened. 6. Describe and transform 2-d shapes using combined transformations.
	Constructions, loci and bearings 1. Draw accurate isometric drawings of 3d shapes. 2. Interpret and draw front, side and plan elevationsof 3-d shapes. 3. Calculate bearings, solve bearing problems, draw bearings and solve bearings problems on scale drawings. 4. Recap the standard ruler & compass constructions (from yr 8)	5. Complete the constructions relevant to loci; a fixed distance from a point, equidistant from 2 points, equidistant from 2 lines, fixed distance from a line. 6. Find and shade regions satisfying a combination of loci. 7. Solve loci problems including with bearings.
	Note – the majority of this work has been covered before, if you finish it with time to spare move onto 2nd HT work as this has a lot of important content.	
2nd Half Term	**Quadratic & Simultaneous Equations** 1. Recap quadratic equation work taught previously; factorise a quadratic expression and use to solve a quadratic equation, including co-eff of $x^2 > 1$ and the difference of 2 squares. 2. Solve quadratic equations that need rearranging to get into the form $ax^2 + bx + c = 0$ (including showing pupils they can simplify an equation before solving by dividing throughout if all the co-effs and the constant have a common factor) 3. Complete the square on a quadratic expression – show the links to the graph of the quadratic – min point, line of symmetry.	4. Solve a quadratic equation by completing the square – leaving the answer in surd form where appropriate. 5. Solve a quadratic equation by using the quadratic formula. 6. Form then solve a quadratic from a practical situation. 7. Solve 2 linear simultaneous equations by elimination. 8. Solve 2 equations simultaneously by substitution – 2 linear, one linear one quadratic, one equation of a circle and one linear 9. To be able to form then solve 2 linear simultaneous equations from a practical situation.
	Inequalities 1. To be able to list integer values that satisfy an inequality. 2. To be able to represent inqualities on a number line (including compound inequalities) 3. Solve linear inequalities (including compound) and represent the solutions on a number line.	

Year 10 Higher A Scheme of Work Overview

3rd Half Term	**Probability** 1. Recap probability from years 7 & 8; theoretical probability of simple events, probabilities sum to 1, experimental probability, sample space diagrams for combined events. 2. Calculate expected outcomes for an event. 3. Calculate probabilities from venn diagrams. 4. Draw a tree diagram to represent independent events. 5. Use the 'and' 'or' rules in conjunction with a tree diagram to calculate probabilities. 6. Calculate conditional probabilities.
	Proportion 1. Recap percentage, ratio and proportion work from yr9; More complex ratio questions – in particular questions that involve scaling up ratios to get equivalent ratios or questions that link ratio to fractions, proportion problem solving – currency conversion, recipes, scales, finding and using a multiplier for a % increase/decrease, applying this to a repeated % change (interest, depreciation etc), solve % problems involving reverse %. 2. Write an equation of proportionality for direct and inverse proportion questions – including values squared, cubed, square rooted and cube rooted. 3. To then be able to use the equation of proportionality to answer problems. 4. Recognise and interpret graphs showing direct and inverse proportion.
4th Half Term	**Similarity & Congruence** 1. Understand the concept of 'similar' shapes. 2. Find the length of missing sides in similar shapes. 3. Understand the effects of enlargement on angles, lengths, areas and volumes. 4. Find the scale factor of an enlargement; use to find missing areas and volumes of shapes by using the scale factor squared or cubed. 5. Find the volume of the frustum of a cone when you have to find missing lengths first using similar triangles. 6. Using formal arguments prove the congruence of triangles. 7. Solve angle problems by first proving congruence.
	Trigonometrical graphs and Transformation of graphs. 1. Recap from year 9; Know the exact Trigonometrical values for sin/cos/tan – 0, 30, 45, 60 and 90 (but not Trig 90). 2. Recognise, sketch and interpret graphs of the trig functions $y = \sin x$, $y = \cos x$, $y = \tan x$. 3. Use the symmetry of these graphs to find sin, cos and tan of angles > 90° 4. Apply transformations to trig graphs – $y = -f(x)$, $y = f(-x)$, $y = f(x) + c$, $y = f(x + c)$, $y = cf(x)$, $y = f(cx)$
	Note – if you finish this work and have time to spare move onto next HT as this has a lot of important content and can be a short HT depending on Easter.

Year 10 Higher A Scheme of Work Overview

5th Half Term	**Further Trigonometry** 1. Recap Pythagoras and Trigonometry in right angles triangles from year 9 - 4th HT. 2. Use Trigonometry and Pythagoras to find angles and lengths in 3-d configurations. 3. Know and use the Sine and Cosine rules. 4. Apply the Sine and Cosine rules to 2-d problems – including bearings. 5. Use the Sine and Cosine rules to solve 3-d problems. 6. Know and apply; area of a triangle = ½abSinC to find area, angle or length of side of a triangle. 7. Find the area of a segment of a circle.
	Cumulative frequency, box plots and Histograms 1. Collect data in a variety of ways and to understand the terminology when collecting data. 2. Construct cumulative frequency tables and graphs. 3. Collect information from cumulative frequency graphs – eg- median, IQR. 4. Construct box-plots to represent data. 5. Compare and contrast 2 sets of data represented in box-plots. 6. Construct a histogram for data with unequal class-widths (using frequency density) 7. Interpret data presented in a Histogram – including finding mean and median.
	Note – the 5th half term can be very short when Easter is late, do not rush these topics, there will be time in the 6th HT to complete them
6th Half Term	**Graphs** 1. Sketch the graph of a quadratic function using roots, y-intercept and turning points. 2. Find approximate solutions to a quadratic equation using graphs. 3. Sketch the graph of a quadratic and a linear function identifying intersection points and understanding their relevance. 4. Expand three brackets. 5. Sketch the graph of a cubic function from three linear functions. 6. Solve quadratic inequalities – by sketching the graph to find critical values. 7. Solve linear inequalities in 2 variables graphically.
	Circle Theorems/Circle geometry 1. Use the circle Theorems to find missing angles. 2. Prove the circle Theorems 3. Find the equation of a tangent to a circle.
	Note – this Half term contains the year 10 exams – there should be a weeks revision in the run up to this and time after to go through the exam

Year 10 Higher B Scheme of Work Overview

-1st Half Term	**Perimeter, Area and circles** 1. Recap area and perimeter work covered in years 7 & 8; area and perimeter of rectangles, triangles, parallelograms and trapeziums. 2. Recap the area and circumference of a circle (covered in year 8). 3. Recap the area and perimeter of compound shapes made from rectangles (covered in year 7). 4. Apply their knowledge of the circle to problems – eg working from an area to find a radius etc, being comfortable calculating and leaving their answers in terms of π. 5. Calculate the area of compound shapes made from all the above – including semi-circles and quarter circles. 6. Find arc lengths, areas of sectors and angles of sectors. 7. Form and solve equations from area and perimeter problems.	**Volume and Surface area** 1. Recap the volume and surface area of a cuboid (covered in year 8). 2. Calculate the volume of a range of prisms including a cylinder. 3. Calculate the surface area of a triangular prism and a cylinder, giving the answer as a decimal or in terms of π. 4. Find the volume and surface area of a composite solid made up of cuboids. 5. Recall and use the formula for the volume of a pyramid. 6. Find the surface area of a pyramid.
2nd Half Term	**Accuracy & Bounds** 1. Recap rounding off – decimal places and significant figures. 2. Calculate the upper and lower bounds of numbers given to varying degrees of accuracy. 3. Find the upper and lower bounds of calculations, including practical contexts – area, perimeter, fencing problems, speed etc.	**Transformations** 1. Reflect 2-d shapes on a set of axes in lines such as y = 3, x = -2, y = x and y = -x. 2. Rotate 2-d shapes on a set of axes (use tracing paper) 3. Translate 2-d shapes by a given vector. 4. Enlarge a given shape from a centre and a scale factor (including fractional scale factors). 5. Describe transformations that have happened. 6. Describe and transform 2-d shapes using combined transformations.
3rd Half Term	**Constructions, loci and bearings** 1. Draw accurate isometric drawings of 3d shapes. 2. Interpret and draw front, side and plan elevations of 3-d shapes. 3. Calculate bearings, solve bearing problems, draw bearings and solve bearings problems on scale drawings. 4. Recap the standard ruler & compass constructions (from yr 8) 5. Complete the constructions relevant to loci; a fixed distance from a point, equidistant from 2 points, equidistant from 2 lines, fixed distance from a line. 6. Find and shade regions satisfying a combination of loci. 7. Solve loci problems including with bearings.	**Probability** 1. Recap probability from years 7 & 8; theoretical probability of simple events, probabilities sum to 1, experimental probability, sample space diagrams for combined events. 2. Calculate expected outcomes for an event. 3. Calculate probabilities from venn diagrams. 4. Draw a tree diagram to represent independent events. 5. Use the 'and' 'or' rules in conjunction with a tree diagram to calculate probabilities.

Year 10 Higher B Scheme of Work Overview

4th Half Term	**Quadratic & Simultaneous Equations** 1. To be able to factorise quadratic equations – coefficient of $x^2 = 1$ 2. To be able to factorise and solve quadratic equations - coefficient of $x^2 = 1$. 3. To be able to solve quadratic equations using the quadratic formula. 4. To be able to rearrange quadratic equations to get them into the form $ax^2 + bx + c = 0$ prior to solving by either of the above ways. 5. To be able to form then solve a quadratic from a practical situation. 6. To be able to solve 2 linear simultaneous equations by elimination. 7. To be able to form then solve 2 linear simultaneous equations from a practical situation.	**Inequalities** 1. To be able to list integer values that satisfy an inequality. 2. To be able to represent inqualities on a number line (including compound inequalities) 3. Solve linear inequalities (including compound) and represent the solutions on a number line.
5th Half Term	**Proportion** 1. To understand the link between ratios and fractions. 2. Solve proportion problems – recipes etc. 3. Answer best value questions. 4. To be able to answer repeated percentage change questions using a multiplier and power. 5. Calculate compound measures – speed/distance time, density etc	**Similarity & Congruence** 1. To understand the concept of 'similar' shapes. 2. To be able to find the length of missing sides in similar shapes. 3. To understand the effects of enlargement on angles, lengths, areas and volumes. 4. To be able to find the scale factor of an enlargement. 5. To be able to find missing areas and volumes of shapes by using the scale factor squared or cubed.
6th Half Term	**Data Handling** 1. To be able to collect data in a variety of ways and to understand the terminology when collecting data. 2. To be able to construct cumulative frequency tables and graphs. 3. To be able to collect information from cumulative frequency graphs – eg- median, IQR. 4. To be able to construct box-plots to represent data. 5. To be able to compare and contrast 2 sets of data represented in box-plots. 6. To be able to construct a histogram for data with unequal class-widths (using frequency density) 7. To be able to interpret data presented in a Histogram.	**Iteration** 1. To be able to use Iteration processes to find approximate solutions to equations. 2. To be able to rearrange equations to create an iteration formula. 3. To be able to use recursive iteration to find increasingly accurate solutions to equations. **This rest of this half term is to be used to finish any topics not covered, revise/prepare for yr 10 exams and then to address topics that are highlighted as a weakness during the yr 10 exams.**

Year 11 Foundation A Scheme of Work Overview

1st Half Term	**Indices and Standard Form** 1. Recap indices work from year 9; I. Effectively use a scientific calculator – brackets, fractions, powers and roots. II. Find the answers to calculations involving indices – both with and without a calculator. III. Use laws of indices to simplify algebraic expressions involving indices. IV. Apply the principles of BODMAS to calculations. 2. Convert numbers in and out of standard form. 3. The 4 operations with numbers in standard form, both with and without a calculator – with particular emphasis on questions in problem form.	**Circles** 1. Recap circles work from year 9; calculate the area and circumference of a circle, calculate the volume of a circle. 2. Find perimeters and areas of semi-circles and quadrants. 3. Calculate the radius/diameter of a circle from the area or circumference. 4. Find the surface area of a cylinder. 5. Find the volume of spheres, cones and other pyramids.
2nd Half Term	**Similarity & Congruence** 1. To understand the concept of 'similar' shapes. 2. To be able to find the length of missing sides in similar shapes.	**Rearranging Equation and graphs** 1. Change the subject of a formula – including ones with powers and roots. 2. Generate points and plot graphs of quadratic functions (recap), cubic functions and reciprocal graphs.

From here onwards the classes will now follow the Year 11 set 3/4 revision schedule.

Year 11 Higher A Scheme of Work Overview

-1st Half Term	**More Complex Algebra (the good stuff!!)** 1. Recap rearranging formulae from year 9 2. Rationalise the denominator of an expression involving Surds – simplifying the resultant expression where needed. 3. Algebraic fractions; simplify expressions, multiply, divide add and subtract, solve quadratics arising from algebraic cases 4. Solve 'show that' and proof questions using consecutive integers.
	Functions 1. Understand function notation. 2. Substitute into a function. 3. Simplify and evaluate composite functions – given f(x) and g(x) find fg(x) etc 4. Find the inverse of a linear function
2nd Half Term	**Vector Geometry** 1. Understand and use vector notation – be aware a vector describes direction and magnitude. 2. Calculate the sum and difference of 2 vectors and multiply a vector by a scalar. 3. Solve vector problems in 2-d. 4. Solve geometric problems in 2-d where vectors are divided in a given ratio. 5. Produce geometric proofs to prove points are collinear and lines are parallel.
	Graphs 1. Recap graphing work from year 9 5th HT – in particular; cubic graphs, reciprocal graphs and exponential graphs (recognising, sketching and interpreting) 2. Transform graphs (note this was done in the context of Trig graphs in Year 10 4th HT) 3. Estimate the area under a graph by dividing it into Trapezia – use to find distance on a speed/time graph. 4. Estimate the gradient of a curve by drawing a tangent and finding the gradient of it. 5. Interpret the gradient of linear and non-linear graphs – including curved distance/time and speed/time graphs.
	Note - Year 11 mock exams are this half term – the SOW will be suspended 2 weeks before for revision and exam preparation.

Year 11 Higher B Scheme of Work Overview

-1st Half Term	**Quadratics & Graphs** 1. To be able to expand 3 brackets and simplify the resultant polynomial. 2. To be able to draw the graph of a quadratic equation by substituting values of x to find values of y. 3. To be able to use the graph of a quadratic equation to find approximate solutions to the quadratic equation. 4. To be able to find the equation of a straight line from the gradient and a point on the line.	**Circle Theorems** 1. To be able to use the circle theorems to find missing angles. 2. To be able to understand the proofs of circle theorems – an extension activity.

From the second half-term onwards the classes will now follow the Year 11 set 2 revision schedule.