SUBJECT: MATHEMATICS - Higher Pathway - Upper

Year Group	Year 9					
Rationale	To be more fluent in the use of mathematical thinking and language. Be introduced to more advanced numerical, algebraic, geometrical and statistical concepts. Know when and how to use a scientific calculator efficiently and effectively.					
Topic/Unit	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Knowledge	▪ Standard Form ▪ Sectors & Arcs ▪ Geometric Sequences ▪ Collecting Data	▪ Angles in Polygons ▪ Set Notation, Venn & Tree Diagrams ▪ Changing the Subject of a Formula	▪ Evaluating & Using Index Laws ▪ Repeated Percentage Change ▪ Working with Recurring Decimals ▪ Simultaneous Equations	▪ Working with Surds & Rationalising ▪ Trigonometry ▪ Volume & Surface Area	▪ Solving Quadratic Equations ▪ Representing & Interpreting Data ▪ Solving & Graphing Inequalities ▪ Financial Awareness PDC Course	▪ Direct & Inverse Proportion ▪ Cumulative Frequency & Box Plots ▪ Histograms & Frequency Polygons
Skills	Standard Form Convert between standard form and ordinary numbers (and vice versa) for large and small numbers. Adjust numbers written in incorrect standard form. Use the four rules of arithmetic with numbers written in standard form, using rules of indices where appropriate. Use a calculator efficiently with standard form values. Compare and order numbers given in standard form. Sectors & Arcs Calculate the length of an arc in any circle or partial circle. Calculate the area of a sector. Deduce the radius or diameter of a circle, given the length of an arc or area of a sector. Geometric Sequences Distinguish between arithmetic and	Angles in Polygons Use the angle sum properties of triangles and quadrilaterals. Understand and use an efficient method to calculate the sum of the interior angles in a regular polygon, each interior angle in a regular polygon and each exterior angle in a regular polygon. Solve angle problems in a range of situations, using interior and exterior angles as well as other angle properties. Set Notation, Venn & Tree Diagrams Complete or draw a Venn diagram from given information. Work out probabilities from Venn diagrams, including conditional probability. Use union, intersection, complement, empty set, curly brackets and universal set	Evaluating & Using Index Laws Find the numerical value of numbers expressed in index form, including positive, negative and fractional indices. Know that any value raised to the power of 0 is equal to 1. Apply the laws of indices to numerical expressions. Write one number as a power of another including to problem solve. Understand that the inverse of raising a number to a power is to raise it to the power of its reciprocal. Repeated Percentage Change Solve problems involving compound interest and depreciation, using multipliers efficiently.	Working with Surds & Rationalising Understand the terms rational and irrational and the definition of a surd. Simplify a surd. Collect 'like terms' surds including the need to simplify first. Manipulate surd expressions involving single and double brackets, including the need to simply and collect like terms. Rationalise denominators involving surds. Solve problems in a range of contexts involving surds. Trigonometry Know and use the trigonometric ratios sine, cosine and tangent and use them to find unknown sides and angles in right-angled triangles. Find angles of elevation and depression. Solve more complex problems using the trig. ratios,	Solving Quadratic Equations Factorise quadratics where 'a' is any integer. Solve quadratic equations by factorising, including equations that need rearranging first. Solve quadratic equations using the quadratic formula, including equations that need rearranging first. Solve quadratic equations using the completing the square, including equations that need factorising or rearranging first. Set up and solve quadratic equations in order to solve problems, giving an answer in context to the problem. Representing & Interpreting Data Design or complete and use two-way tables. Draw and/or interpret composite and dual bar charts.	Direct & Inverse Proportion Identify direct or inverse proportion from a table of values or otherwise by comparing the ratios of values. Write statements of proportionality for values in direct or inverse proportion, including squared, cubed or rooted. Set up and devise formulae using 'k' for direct and inverse proportion. Calculate unknown quantities that vary in direct or inverse proportion to a given quantity, including squared, cubed and rooted values. Recognise and interpret graphs showing direct and inverse proportion. Cumulative Frequency & Box Plots Construct cumulative frequency tables and graphs. Find the median, quartliles and

geometric sequences. Find the common ratio in a geometric sequence and use it to continue a sequence. Find missing terms in a geometric sequence using the common ratio. Collecting Data Understand primary and secondary data and know advantages and disadvantages of both. Understand discrete, continuous, quantitative and qualitative data and classify given data correctly. Understand the terms sample, census and population. Identify sources of bias when sampling and understand how to reduce bias through altering sampling methods. Calculate the size of a stratified sample. Use 'Capture-Recapture' techniques to calculate solve problems with sample sizes.	notation, both when using Venn diagrams or without. Draw or complete a tree diagram from given information. Understand the use of the AND and OR rule in a tree diagram. Calculate the probability of combined events using a tree diagram for independent and dependent events as well as unconditional and conditional probability. Changing the Subject of a Formula Change the subject of a simple linear one or two-step formula or equation. Change the subject of a formula or equation involving fractions or small powers of the subject. Change the subject of a formula or equation where the subject appears on both sides of the original, using factorising to support.	Work out a single multiplier for a repeated proportional change. Working with Recurring Decimals Decide whether a fraction is recurring or terminating by writing its denominator in prime factor form Convert a fraction to a recurring decimal. Convert a recurring decimal to a fraction. Solve problems involving the conversion of recurring decimals. Simultaneous Equations Solve a pair of linear simultaneous equations using elimination, including working with fractional and negatives solutions. Identify the solutions of simultaneous equations drawn graphically. Set up simultaneous equations to represent a situation and solve within the context of the problem.	including Pythagoras' theorem, simple bearings, area & perimeter and angle properties. Know the exact values of sin θ, cos θ and tan θ for 0°, 30°, 45° and 60° and 90° for sin θ and cos θ only. Volume & Surface Area Find the surface area of prisms made from triangles and/or rectangles, including composite prisms. Find the surface area of a cylinder. Find the surface area of a pyramid. Find the surface area of a sphere. Find the surface area of a cone. Find the volume of prisms made of rectilinear shapes, including cuboids, triangular prisms and composite shapes. Find the volume of a cylinder. Find the volume of a pyramid. Find the volume of a sphere. Find the volume of a cone. Solve a range of problems involving volume and/or surface area	Draw and/or interpret pie charts, including comparing two pie charts that represent different sample sizes. Solving & Graphing Inequalities Solve two linear inequalities, find the solutions sets and compare them to see which value(s) satisfies both inequalities. Solve linear inequalities in two variables both algebraically and graphically. Show the solutions set of several inequalities in two variables through regions on a set of graphs. Financial Awareness PDC Course Role play and model real–life scenarios of managing a household budget, given a range of different variables regarding gross and net wages, unexpected bills and the seen and hidden costs of maintaining a house and family. Learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money. Discuss when debt can be a positive thing and when it is not, and how to avoid getting into debt.	IQR using a cumulative frequency graph. Interpret cumulative frequency graphs in order to solve a range of problems in context. Construct a box plot from raw data or from calculations or a cumulative frequency graph. Interpret a box plot, including in the context of a problem.Use cumulative frequency graphs and/or box plots to compare two data distributions, giving an interpretation in the context of the situation. Histograms & Frequency Polygons Draw histograms with equal class intervals. Draw histograms with unequal class intervals, using frequency density. Complete a histogram with unequal class intervals from given data. Construct a grouped frequency table from a histogram. Estimate the mean from a histogram. Estimate the median from a histogram. Estimate the frequency of a specified interval anywhere within a histogram. Construct and plot frequency polygons. Interpret frequency

					Consider the amount of income tax paid from a range of salaries. Look at the range of methods used in modern day banking.	polygons including when comparing data distributions.
Assess-ments	Assessment 8	Assessment 9 moved to this term		Assessment 10	Assessment 11	EOY Assessment
Homework	Mathswatch: Higher upper revision assignment assessment 8	Mathswatch: Higher upper revision assignment assessment 9 Retrieval grid	Core skills homework booklet	Mathswatch: Higher upper revision assignment assessment 10	Mathswatch: Higher upper revision assessment 11	Mathswatch: Higher upper EOY revision assignment Core skills homework booklet

SUBJECT: MATHEMATICS – Higher Pathway - Lower

Year Group:	Year 9					
Rationale	To be more fluent in the use of mathematical thinking and language. Be introduced to more advanced numerical, algebraic, geometrical and statistical concepts. Know when and how to use a scientific calculator efficiently and effectively.					
Topic/Unit	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Knowledge	- Standard Form - Circles, Sectors & Arcs - Geometric Sequences - Collecting Data	- Angles in Polygons & Parallel Lines - Set Notation, Venn & Tree Diagrams - Changing the Subject of a Formula	- Evaluating & Using Index Laws - Repeated Percentage Change & Reverse Percentages - Working with Recurring Decimals - Simultaneous Equations	- Working with Surds & Rationalising - Trigonometry - Volume & Surface Area	- Solving Quadratic Equations - Representing & Interpreting Data - Solving & Graphing Inequalities - Financial Awareness PDC Course	- Direct & Inverse Proportion - Cumulative Frequency & Box Plots - Histograms & Frequency Polygons
Skills	<u>Standard Form</u> Convert between standard form and ordinary numbers (and vice versa) for large and small numbers. Adjust numbers written in incorrect standard form. Use the four rules of arithmetic with numbers written in standard form, using rules of indices where appropriate. Use a calculator efficiently with standard form values. Compare and order numbers given in standard form. <u>Circles, Sectors & Arcs</u> Calculate the area or perimeter of composite shapes made from circles and parts of circles, including semi-circles and quadrants. Calculate the length of an arc in any circle or partial circle. Calculate the area of a sector.	<u>Angles in Polygons & Parallel Lines</u> Use the angle properties of parallel lines to find missing angles (alternate, corresponding, co-interior) giving clear reasoning. Identify and use vertically opposite angles. Use the angle sum properties of triangles and quadrilaterals. Understand and use an efficient method to calculate the sum of the interior angles in a regular polygon, each interior angle in a regular polygon and each exterior angle in a regular polygon. Solve angle problems in a range of situations, using interior and exterior angles as well as other angle properties. <u>Set Notation, Venn & Tree Diagrams</u> Complete or draw a Venn	<u>Evaluating & Using Index Laws</u> Find the numerical value of numbers expressed in index form, including positive, negative and fractional indices. Know that any value raised to the power of 0 is equal to 1. Apply the laws of indices to numerical expressions. Write one number as a power of another including to problem solve, in simple cases. Understand that the inverse of raising a number to a power is to raise it to the power of its reciprocal. <u>Repeated Percentage Change</u> Solve problems involving compound interest and	<u>Working with Surds & Rationalising</u> Understand the terms rational and irrational and the definition of a surd. Understand and use surd notation. Simplify a surd. Collect 'like terms' surds including the need to simplify first. Manipulate surd expressions involving single and double brackets, including the need to simply and collect like terms. Rationalise denominators involving simple surds. <u>Trigonometry</u> Know and use the trigonometric ratios sine, cosine and tangent and use them to find unknown sides and angles in right-angled triangles. Find angles of elevation and depression. Solve problems using the trig.	<u>Solving Quadratic Equations</u> Solve quadratic equations by factorising, including equations that need rearranging first. Solve quadratic equations using the quadratic formula, including equations that need rearranging first. Set up and solve quadratic equations in order to solve problems, giving an answer in context to the problem. <u>Representing & Interpreting Data</u> Design or complete and use two-way tables. Draw and/or interpret composite and dual bar charts. Draw and/or interpret pie charts, including comparing two pie charts that represent different sample sizes.	<u>Direct & Inverse Proportion</u> Identify direct or inverse proportion from a table of values or otherwise by comparing the ratios of values. Write statements of proportionality for values in direct or inverse proportion, including squared, cubed or rooted. Set up and devise formulae using 'k' for direct and inverse proportion. Calculate unknown quantities that vary in direct or inverse proportion to a given quantity, including squared, cubed and rooted values. Recognise and interpret graphs showing direct and inverse proportion. <u>Cumulative Frequency & Box Plots</u> Construct cumulative frequency tables and graphs.

Geometric Sequences

Distinguish between arithmetic and geometric sequences.
Find the common ratio in a geometric sequence and use it to continue a sequence.
Find missing terms in a geometric sequence using the common ratio.

Collecting Data

Understand primary and secondary data and know advantages and disadvantages of both.
Understand discrete, continuous, quantitative and qualitative data and classify given data correctly.
Understand the terms sample, census and population.
Identify sources of bias when sampling and understand how to reduce bias through altering sampling methods.
Calculate the size of a stratified sample.
Use 'Capture-Recapture' techniques to calculate solve problems with sample sizes.

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diagram from given information.
Work out probabilities from Venn diagrams, including conditional probability.
Use union, intersection, complement, empty set, curly brackets and universal set notation, both when using Venn diagrams and not.
Draw or complete a tree diagram from given information.
Understand the use of the AND and OR rule in a tree diagram.
Calculate the probability of combined events using a tree diagram for independent and dependent events as well as unconditional and conditional probability.
Estimate the number of times an event will happen from given information and relative frequency.

Changing the Subject of a Formula

Change the subject of a simple linear one or two-step formula or equation.
Change the subject of a formula or equation involving fractions or small powers of the subject.
Change the subject of a formula or equation where the subject appears on both sides of the

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depreciation, using multipliers efficiently.
Work out a single multiplier for a repeated proportional change.
Find the original amount after a percentage increase or decrease.

Working with Recurring Decimals

Decide whether a fraction is recurring or terminating by writing its denominator in prime factor form.
Convert a fraction to a recurring decimal.
Convert a recurring decimal to a fraction.
Solve problems involving the conversion of recurring decimals.

Simultaneous Equations

Solve a pair of linear simultaneous equations using elimination, including working with fractional and negatives solutions.
Identify the solutions of simultaneous equations drawn graphically.
Set up simultaneous equations to represent a situation and solve within the context of the problem.

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ratios, including Pythagoras' theorem, simple bearings, area & perimeter and angle properties.
Know the exact values of $\sin \theta$, $\cos \theta$ and $\tan \theta$ for 0°, 30°, 45° and 60° and 90° for $\sin \theta$ and $\cos \theta$ only.

Volume & Surface Area

Find the surface area of prisms made from triangles and/or rectangles, including composite prisms.
Find the surface area of a cylinder.
Find the surface area of a pyramid.
Find the surface area of a sphere.
Find the surface area of a cone.
Find the volume of prisms made of rectilinear shapes, including cuboids, triangular prisms and composite shapes.
Find the volume of a cylinder.
Find the volume of a pyramid.
Find the volume of a sphere.
Find the volume of a cone.
Solve a range of problems involving volume and/or surface area.

Solving & Graphing Inequalities

Solve two linear inequalities, find the solutions sets and compare them to see which value(s) satisfies both inequalities.
Solve linear inequalities in two variables both algebraically and graphically.
Show the solutions set of several inequalities in two variables through regions on a set of graphs.

Financial Awareness PDC Course

Role play and model real–life scenarios of managing a household budget, given a range of different variables regarding gross and net wages, unexpected bills and the seen and hidden costs of maintaining a house and family.
Learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money.
Discuss when debt can be a positive thing and when it is not, and how to avoid getting into debt.
Consider the amount of income tax paid from a range of salaries.
Look at the range of methods used in

Find the median, quartliles and IQR using a cumulative frequency graph.
Interpret cumulative frequency graphs in order to solve a range of problems in context.
Construct a box plot from raw data or from calculations or a cumulative frequency graph.
Interpret a box plot, including in the context of a problem.
Use raw data with a box plot or two box plots to compare two data distributions, giving an interpretation in the context of the situation.

Histograms & Frequency Polygons

Draw histograms with equal class intervals.
Draw histograms with unequal class intervals, using frequency density.
Complete a histogram with unequal class intervals from given data.
Construct a grouped frequency table from a histogram.
Estimate the mean from a histogram.
Estimate the median from a histogram.
Construct and plot frequency polygons.
Interpret frequency polygons including when comparing data distributions.

		original, using factorising to support – simple examples.			modern day banking.	
Assess-ments	Assessment 8	Assessment 9 moved to this half term		Assessment 10	Assessment 11	EOY Assessment
Homework	Mathswatch: Higher lower revision assessment 8	Mathswatch: Higher lower revision assessment 9

Retrieval grid | Core skills homework booklet | Mathswatch: Higher lower revision Assessment 10 | Mathswatch: Higher lower revision assessment 11 | Mathswatch: Higher lower EOY revision assignment

Core skills homework booklet |

SUBJECT: MATHEMATICS – Foundation Pathway - Upper

Year Group	YEAR 9					
Rationale	To be more fluent in the use of mathematical thinking and language. Be introduced to more advanced numerical, algebraic, geometrical and statistical concepts. Know when and how to use a scientific calculator efficiently and effectively.					
Topic/Unit	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Knowledge	▪ Indices & Standard Form ▪ Area – Further Quadrilaterals & Circles ▪ Geometric, Fibonacci & Quadratic Sequences	▪ Collecting Data ▪ Parallel Lines & Polygons ▪ Real Life Percentages & Multipliers	▪ Pie Charts ▪ Surface Area ▪ Pythagoras' Theorem	▪ Venn Diagrams & Set Notations ▪ Working with Quadratics ▪ Ratio Contexts	▪ 3D Shapes & Volume ▪ Graphs & Charts ▪ Financial Awareness PDC Course	▪ Two Way Tables & Averages ▪ Expressions, Equations & Inequalities revisit ▪ Angle Properties revisit
Skills	Indices & Standard Form Use index laws to simplify and calculate the numerical value of expression involving multiplication, division of powers and powers of a power. Use index laws to calculate the value of numbers raised to fractional powers and to the power zero. Convert between standard form and ordinary numbers (and vice versa) for large and small numbers. Adjust numbers written in incorrect standard form. Use the four rules of arithmetic with numbers written in standard form, using rules of indices where appropriate. Use a calculator efficiently with standard form values. Area – Further Quadrilaterals & Circles Find the area of trapezia and parallelograms.	Collecting Data Identify types of data: primary, secondary, discrete, continuous, quantitative and qualitative. Understand sample and population. Design and use data collection sheets for discrete data and continuous grouped data. Understand bias and consider how to eliminate it when sampling. Parallel Lines & Polygons Recognise and name polygons, including regular and irregular shapes. Calculate the sum of interior angles in a polygon. Calculate the exterior angle of a regular polygon. Calculate the interior angle of a regular polygon. Solve simple problems involving	Pie Charts Construct pie charts, drawing angles to the nearest degree. Interpret pie charts including finding the mode and comparing two pie charts. Compare pie charts representing different totals. Surface Area Sketch nets of prisms and simple non-prisms in order to identify the surfaces of a prism. Find the total surface area of a prism or simple non-prism. Convert between metric measurements of area. Pythagoras' Theorem Understand and use Pythagoras' theorem to find missing lengths in given right angle triangles – for a hypotenuse and other shorter side. Justify whether a triangle is right-angled using Pythagoras' theorem. Calculate the length of line segments, given their end coordinates. Manipulate other shapes in order to	Venn Diagrams & Set Notation Work out probabilities from Venn diagrams or from given sets. Complete or construct a Venn diagram from given information. Use correct set notation for union, intersection, complement, the empty set, the universal set and brackets { } Working with Quadratics Expand and simplify double brackets. Factorise quadratic expressions in the form $x^2 + bx + c$. Generate points and plot graphs of quadratic functions. Identify the turning point and line of symmetry of a quadratic graph. Ratio Contexts Use a variety of measures in ratio and proportion problems related to: currency	3D Shapes & Volume Identify and name common 3D shapes. Know and use the formulae to calculate the volume of a cube, cuboid and triangular prism. Find the volume of a range of different composite prisms made from cubes, cuboids and triangular prisms. Convert between metric measures of volume and capacity. Graphs & Charts Draw and interpret a range of diagrams: pictograms, bar charts, dual bar charts, composite bar charts, bar-line graphs, vertical line charts, line graphs, time series graphs, histograms with equal class widths and stem and leaf diagrams. Calculate total population from a graph, chart or table. Find the median, mode and range from a stem and leaf diagram.	Two Way Tables & Averages Complete given two-way tables. Construct a two-way table from given information in order to solve a problem. Complete given frequency trees. Construct a frequency tree from given information in order to solve a problem. Find the median, mean and range from a frequency table. Find the range, modal class interval and class interval containing the median from a group frequency table. Find the estimated mean from a grouped frequency table and appreciate why it is an estimate. Expressions, Equations & Inequalities Simplify expressions by adding, subtracting, multiplying and dividing terms including those with powers. Simplify expressions involving brackets.

	Name and identify parts of a circle. Recall and use the formulae to find the area and circumference of a circle, giving answers as decimals or in terms of pi. Find the radius or diameter given the area of circumference of a circle. Find the perimeter and area of semi-circles and quarter circles. Find the perimeter and area of composite shapes made from partial circles. Geometric & Quadratic Sequences Continue a quadratic sequence and use the nth term to generate terms. Justify whether a terms is contained in a quadratic sequence. Distinguish between arithmetic, Fibonacci and geometric sequences. Find missing terms in a Fibonacci type sequence. Continue a geometric sequence and find the common ratio.	interior and exterior angles. Use the angle properties of parallel lines: alternate, co-interior and corresponding. Use angle properties to solve a range of missing angle problems. Identify congruent shapes by eye. Real Life Percentages & Multipliers Use percentages in real-life contexts including percentages greater than 100%: Price after VAT, value of profit and loss, simple interest, tax calculations. Use decimal multipliers to find percentages of quantities and the value of quantities after a percentage increase or decrease.	use Pythagoras' theorem. Calculate the length of a line segment on a co-ordinate grid.	conversions, rate of pay, best value.	Compare two distributions using appropriate averages and spread, either from raw data or given diagrams, including within a context. Financial Awareness PDC Course Role play and model real–life scenarios of managing a household budget, given a range of different variables regarding gross and net wages, unexpected bills and the seen and hidden costs of maintaining a house and family. Learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money. Discuss when debt can be a positive thing and when it is not, and how to avoid getting into debt. Consider the amount of income tax paid from a range of salaries. Look at the range of methods used in modern day banking.	Factorise fully into single brackets. Solve a range of linear equations with integer coefficients. Form and solve equations from given information and interpret the results in the context of the problem. Answer 'show that' questions using a range of algebraic techniques. Solve linear inequalities in one variable and represent the solution on a number line. Solve 'double inequalities' such as -3 < 2x + 1 < 7. Solve two inequalities in x and find the value(s) that satisfy both. Use inequality notation to express error intervals for rounding and truncation. Angle Properties Solve a range of geometric problems involving missing angles, giving reasons, using the following properties: angles on a straight line, angles around a point, vertically opposite angles, angles inside a triangle, angles inside a quadrilateral, isosceles triangles, corresponding, alternate and co-interior angles
Assess-ments	Assessment 8		Assessment 9	Assessment 10	Assessment 11	EOY Assessment
Homework	Mathswatch: Foundation upper revision assignment 8	Retrieval grid	Mathswatch: Foundation upper revision assignment 9	Mathswatch: Foundation upper revision assignment 10	Mathswatch: Foundation upper revision assignment 11	Mathswatch: EOY revision assignment

			Core skills homework booklet			Core skills homework booklet

Core skills homework booklet

SUBJECT: MATHEMATICS – Foundation Pathway - Lower

Year Group	Year 9					
Rationale	Consolidate and extend mathematical thinking and language. Be introduced to more advanced numerical, algebraic, geometrical and statistical concepts. Be more confident using a scientific calculator effectively.					
Topic/Unit	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Knowledge	▪ Indices, Order of Operations & Standard Form ▪ Area – Circles, Triangles & Quadrilateral ▪ Sequences & Nth Terms	▪ Collecting Data ▪ Parallel Lines & Angles ▪ Real Life Percentages	▪ Pie Charts ▪ Surface Area ▪ Pythagoras' Theorem	▪ Venn Diagrams & Set Notations ▪ Solving Linear Equations ▪ Ratio Contexts	▪ 3D Shapes & Volume ▪ Graphs & Charts ▪ Financial Awareness PDC Course	▪ Two Way Tables ▪ Ratio & Proportion revisit ▪ Working with Expressions revisit
Skills Skills	<u>Indices, Order of Operations & Standard Form</u> Use index laws to multiply and divide numbers written in index notation. Use index laws to evaluate numbers written to the power of a simple unit fraction or the power zero. Use brackets and the hier-archy of opera-tions, including powers. Convert between standard form and ordinary numbers (and vice versa) for large and small numbers. Use the four rules of arithmetic with numbers written in standard form, in very simple cases. Use a calculator to enter simple standard form calculations and interpret the display. <u>Area – Circles, Triangles & Quadrilaterals</u> Find the perimeter of rectangles, triangles, parallelograms and trapezia. Find the perimeter of composite shapes made	<u>Collecting Data</u> Identify types of data: primary, secondary, discrete, continuous, quantitative and qualitative (with support). Understand sample and population. Design and use data collection sheets for discrete data and continuous grouped data. Understand bias and consider how to eliminate it when sampling. <u>Parallel Lines & Angles</u> Find missing angles in different triangles and quadrilaterals. Use the properties of right angles, angles on a straight line, angles at a point and vertically opposite angles to find missing angles. Identify and mark parallel lines on diagrams. Use the angle properties of parallel lines:	<u>Pie Charts</u> Construct pie charts, drawing angles to the nearest degree. Interpret simple pie charts including finding the mode. Compare pie charts representing different totals, using simple proportions such as ½ and ¼ <u>Surface Area</u> Recall and use the formulae for the area of a rectangle and triangle. Find the total surface area of a simple prism or non-prism made from rectangular and triangular faces. Convert between metric measurements of area. <u>Pythagoras' Theorem</u> Substitute given values into Pythagoras' theorem. Understand and use Pythagoras' theorem to find missing lengths in given right angle triangles – for a hypotenuse and other shorter side.	<u>Venn Diagrams & Set Notation</u> Work out probabilities from Venn diagrams or from given sets. Complete or construct a Venn diagram from simple given information. Use correct set notation for union, intersection, complement, the empty set, the universal set and brackets { } - all in very simple cases. <u>Solving Linear Equations</u> Write simple expressions or equations from given information. Solve linear equations with integer coefficients where the unknown appears on either side, extending to both sides in simple cases. Solve equations involving brackets. Rearrange simple equations where the subject	<u>3D Shapes & Volume</u> Identify and name common 3D shapes. Know and use the formulae to calculate the volume of a cube, cuboid and triangular prism. Find the volume of a range of different simple composite right-prisms made from cubes, cuboids and triangular prisms. <u>Graphs & Charts</u> Draw and interpret a range of diagrams: pictograms, bar charts, dual bar charts, composite bar charts, bar-line graphs, vertical line charts, line graphs, time series graphs, histograms with equal class widths and stem and leaf diagrams. Find the greatest and least value from a bar chart or table of data. Calculate total population from a graph, chart or table. Find the median, mode and range from a stem and leaf diagram.	<u>Two Way Tables</u> Complete given two-way tables. Construct a small two-way table from given information in order to solve a problem. Complete given frequency trees. <u>Ratio & Proportion Revisit</u> Write a ratio to describe a situation or to represent a division of parts. Simplify ratios including writing ratios in simple unitary form. Share a quantity in a given ratio including 3 part ratios. Interchange between fractions and ratios. Convert between currencies in a range of contexts. Manipulate recipes in a range of contexts. Solve proportion problems using the unitary method. Work out and justify which product offers the best value for money, in simple cases. Use a ratio to compare a scale model to a real life object

from rectangles, triangles, parallelograms and trapezia. Use the formulae to calculate the area of rectangles, triangles, parallelograms and trapezia. Find the area of composite shapes made from rectangles and triangles. Name and identify parts of a circle. Recall and use the formulae to find the area and circumference of a circle. Sequences & Nth Terms Describe the term-to-term rule in a sequence and use it to find missing terms or continue a sequence. Recognise sequences in patterns of diagrams and continue the diagrams. Generate arith-metic sequen-ces, given term-to-term rules as well as sequence of square and cube numbers. Find the nth term of a linear sequence. Use the nth term to find a specific term in a sequence and to test if a number appears in a sequence, in simple cases.	alternate, co-interior and corresponding. Use angle properties to solve a range of simple missing angle problems. Real Life Percentages Calculate the percentage of a quantity. Calculate the amount in a percentage increase and decrease. Use percentages in simple real-life situations including percentages greater than 100%, price after VAT, value of profit and loss and simple interest.		appears only once. Ratio Contexts Use a variety of measures in simple ratio and proportion problems related to: currency conversions, rate of pay, best value.	Financial Awareness PDC Course Role play and model real–life scenarios of managing a household budget, given a range of different variables regarding gross and net wages, unexpected bills and the seen and hidden costs of maintaining a house and family. Learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money. Discuss when debt can be a positive thing and when it is not, and how to avoid getting into debt. Consider the amount of income tax paid from a range of salaries. Look at the range of methods used in modern day banking.	Working with Expressions Revisit Simplify expressions by adding, subtracting, multiplying and dividing terms including those with powers. Simplify expressions involving brackets. Factorise fully into single brackets.
Assess-ments	Assessment 8		Assessment 9	Assessment 10	Assessment 11	EOY Assessment
Homework	Mathswatch: Foundation lower Revision assignment 8	Core skills homework booklet	Mathswatch: Foundation lower revision assignment 9	Mathswatch: Foundation lower revision assignment 10	Mathswatch: Foundation lower revision assignment 11 Core skills homework booklet	Mathswatch: Foundation lower EOY revision assignment