



SUBJECT: MATHEMATICS – Advanced+

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.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic/Unit	- 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
Knowledge	Standard Form Pupils will know how to convert between standard form and ordinary numbers (and vice versa) and be able to adjust numbers written in incorrect standard form. Pupils will know how to use the rules of arithmetic with standard form. Pupils will understand how to compare and order standard form numbers and how to use a calculator efficiently. Sectors & Arcs Pupils will know how to calculate the length of an arc and the area of a sector. Pupils will develop their understanding of how to deduce the radius or diameter of a circle, when given the length of an arc or area of a sector. Geometric Sequences Pupils will know how to identify the difference between arithmetic and	Angles in Polygons Pupils will know how to use the angle-sum properties of triangles and quadrilaterals. Pupils will know how to calculate the sum of the interior angles in a regular polygon, an individual interior and exterior angle of a regular polygon. Pupils will be able to solve angle problems in a range of situations. Set Notation, Venn & Tree Diagrams Pupils will know how to complete a Venn diagram from given information and work out probabilities. Pupils will understand union, intersection, complement, empty set, curly brackets and universal set notations. Pupils will be able to complete tree diagrams and understand how to use the	Evaluating & Using Index Laws Pupils will know how to find the numerical value of numbers expressed in index form, including positive, negative and fractional indices. Pupils will know that any value raised to the power of 0 is equal to 1. Pupils will be able to apply the laws of indices to numerical expressions and write one number as a power of another. Pupils will understand that the inverse of raising a number to a power is to raise it to the power of its reciprocal. Repeated Percentage Change Pupils will know how to work out a decimal multiplier for a repeated percentage change. Pupils will be able to solve problems involving	Working with Surds & Rationalising Pupils will understand the terms rational and irrational and the know the definition of a surd. Pupils will learn how to simplify a single surd and expressions involving surds. Pupils will be able to manipulate surd expressions involving single and double brackets, rationalise denominators involving surds and solve problems with surds in a range of contexts. Trigonometry Pupils will know how to use the trigonometric ratios sine, cosine and tangent to find unknown sides and angles in right-angled triangles. Pupils will be able to work out angles of elevation and depression. Pupils will know the exact values of $\sin \theta$, $\cos \theta$ and $\tan \theta$ for 0°,	Solving Quadratic Equations Pupils will know how to solve quadratics by factorisation. Pupils will be able to use the quadratic formula and 'completing the square' to solve equations. Pupils will know how to set up and solve quadratic equations to solve problems, giving an answer in context to the problem. Representing & Interpreting Data Pupils will be able to complete two-way tables, draw and/or interpret composite and dual bar charts & pie charts. Pupils will know how to compare two pie charts that represent different sample sizes. Solving & Graphing Inequalities Pupils will be able to solve two linear inequalities, find the solutions sets and then compare them to see which values satisfies both inequalities. Pupils will know how to solve	Direct & Inverse Proportion Pupils will know how to identify direct and inverse proportion from a table of values and from graphs. Pupils will be able to write statements of proportionality. for direct and inverse proportion, Pupils will be able to set up and devise formulae using the constant of proportionality 'k' for direct and inverse proportion. Cumulative Frequency & Box Plots Pupils will know how to construct cumulative frequency tables and graphs. Pupils will be able to find the median, quartiles and IQR from a cumulative frequency curve. Pupils will know how to interpret cumulative frequency graphs to solve problems in a range of context.



	geometric sequences. Pupils will be able to find the common ratio in a geometric sequence, continue the sequence and find missing terms. <u>Collecting Data</u> Pupils will understand the definitions of the words sample, census and population. Pupils will define the meanings of the data types - primary and secondary, discrete, continuous, quantitative and qualitative data. Pupils will be able to classify data, correctly identify sources of bias when sampling and understand how to reduce bias. Pupils will learn how to calculate the size of a stratified sample and use 'Capture-Recapture' techniques.	'AND' and 'OR' rule. Pupils will know how to calculate the probability of combined events using a tree diagram for independent & dependent events and for unconditional & conditional probability. <u>Changing the Subject of a Formula</u> Pupils will know how to change the subject of a one or two-step equation including those involving fractions or small powers of the subject. Pupils will know how to change the subject of a formula or equation where the subject appears on both sides.	compound interest, appreciation and depreciation. <u>Working with Recurring Decimals</u> Pupils will know how to check if a fraction is recurring or terminating. Pupils will be able to convert a fraction to a recurring decimal and vice versa. <u>Simultaneous Equations</u> Pupils will be able to solve a pair of linear simultaneous equations, including ones with fractional and negatives numbers. Pupils will know how to find the solutions of simultaneous equations which have been plotted on a graph. Pupils will be able to form (and solve) simultaneous equations from given information.	30°, 45° and 60° and 90°. Pupils will be able to solve complex problems that involve using trig. ratios alongside Pythagoras' theorem, bearings, area & perimeter or other angle properties. <u>Volume & Surface Area</u> Pupils will know how to find the surface area and volume of a range of prisms and 3D shapes. Pupils will be able use their knowledge to solve a range of problems involving surface area and/or volume.	algebraically and graphically linear inequalities in two variables. Pupils will be able to show the solutions set of inequalities through regions on a graph. <u>Financial Awareness PDC Course</u> Pupils will role play in 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 unseen costs of maintaining a house and family. Pupils will learn about credit, debt, tax, VAT, income, borrowing and saving. Pupils will study a range of methods used in modern day banking.	Pupils will know how to construct a box plot from raw data or from a cumulative frequency curve and interpret the box plot in the context of a problem. Pupils will be able to use cumulative frequency curves and/or box plots to compare two data distributions, giving an interpretation in the context of the situation. <u>Histograms & Frequency Polygons</u> Pupils will know how to work out frequency density and draw histograms with equal and unequal class intervals. Pupils will be able to construct a grouped frequency table from a histogram. Pupils will know how to estimate the mean and median from a histogram and how to estimate the frequency of a specified interval anywhere within a histogram. Pupils will be able to construct frequency polygons and interpret them to compare data distributions.
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	<u>Angles in Polygons</u> 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	<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	<u>Working with Surds & Rationalising</u> 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.	<u>Solving Quadratic Equations</u> Factorise quadratics where 'a' is any integer. Solve quadratic equations by factorising, including equations that need rearranging first. Solve quadratic equations using	<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



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 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	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 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	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. 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.	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, 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	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. 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	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, quartiles and IQR using a cumulative frequency graph. Interpret cumulative frequency graphs 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
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	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.	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.	Identify the solutions of simultaneous equations drawn graphically. Set up simultaneous equations to represent a situation and solve within the context of the problem.	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	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.	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 polygons including when comparing data distributions.
Assessments Formative	Assessment 8 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 9 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 10 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 11 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.
Assessments Summative		Assessment 1 will contain questions designed to assess students learning of the topics taught in the first term.			End-of-Year assessment designed to assess the students learning of all topics taught across the previous terms.	
Homework	Mathswatch: Advanced + revision assignment for assessment 8 Independent homework tasks based on class teacher professional judgement	Mathswatch: Advanced+ revision assignment for assessment 9 Independent homework tasks	Core skills homework booklet Independent homework tasks	Mathswatch: Advanced+ revision assignment for assessment 10 Independent homework tasks	Mathswatch: Advanced+ Revision assignment for end-of-year exams Independent homework tasks	Mathswatch: Advanced revision assignment for assessment 11 Core skills homework booklet Independent homework tasks



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Year Group:	Year 9 –					
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Topic/Unit	- 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
Knowledge	Standard Form Pupils will know how to convert between standard form and ordinary numbers (and vice versa). Pupils will be able to adjust numbers written in incorrect standard form. Pupils will know how to use the rules of arithmetic with standard form numbers, using rules of indices when appropriate. Pupils will understand how to compare and order numbers given in standard form and how to use a calculator efficiently with standard form numbers. Circles, Sectors & Arcs Pupils will know how to calculate the area or perimeter of composite shapes made from circles and parts of circles. Pupils will be able to calculate the length of an arc and area of	Angles in Polygons Pupils will know how to use the angle-sum properties of triangles and quadrilaterals. Pupils will know how to calculate the sum of the interior angles in a regular polygon, the individual interior angle and exterior angle of a regular polygon. Pupils will be able to solve angle problems in a range of situations, using angle properties. Set Notation, Venn & Tree Diagrams Pupils will know how to complete a Venn diagram from given information and work out probabilities. Pupils will understand union, intersection, complement, empty set, curly brackets and universal set notations. Pupils will be able to complete tree diagrams	Evaluating & Using Index Laws Pupils will know how to find the numerical value of numbers expressed in index form, including positive, negative and fractional indices. Pupils will know that any value raised to the power of 0 is equal to 1. Pupils will be able to apply the laws of indices to numerical expressions and write one number as a power of another. Pupils will understand that the inverse of raising a number to a power is to raise it to the power of its reciprocal. Repeated Percentage Change Pupils will know how to work out a decimal multiplier for a repeated percentage change. Pupils will be able to	Working with Surds & Rationalising Pupils will understand the terms rational and irrational and the know the definition of a surd. Pupils will learn how to simplify a single surd and expressions involving surds. Pupils will be able to manipulate surd expressions involving single and double brackets, rationalise denominators involving surds and solve problems with surds in a range of contexts. Trigonometry Pupils will know how to use the trigonometric ratios sine, cosine and tangent to find unknown sides and angles in right-angled triangles.	Solving Quadratic Equations Pupils will know how to solve quadratics by factorisation. Pupils will be able to use the quadratic formula and 'completing the square' to solve equations. Pupils will know how to set up and solve quadratic equations to solve problems, giving an answer in context to the problem. Representing & Interpreting Data Pupils will be able to complete two-way tables, draw and/or interpret composite and dual bar charts & pie charts. Pupils will know how to compare two pie charts that represent different sample sizes. Solving & Graphing Inequalities Pupils will be able to solve two	Direct & Inverse Proportion Pupils will know how to identify direct and inverse proportion from a table of values and from graphs. Pupils will be able to write statements of proportionality for direct and inverse proportion. Pupils will be able to set up and devise formulae using the constant of proportionality 'k' for direct and inverse proportion. Cumulative Frequency & Box Plots Pupils will know how to construct cumulative frequency tables and graphs. Pupils will be able to find the median, quartiles and IQR from a cumulative frequency curve. Pupils will know how to interpret cumulative frequency graphs to solve



	a sector in any circle or partial circle. <u>Geometric Sequences</u> Pupils will know how to identify the difference between arithmetic and geometric sequences. Pupils will be able to find the common ratio in a geometric sequence, continue the sequence and find missing terms. <u>Collecting Data</u> Pupils will understand the definitions of the words sample, census and population. Pupils will define the meanings of the data types - primary and secondary, discrete, continuous, quantitative and qualitative data. Pupils will be able to classify data, correctly identify sources of bias when sampling and understand how to reduce bias. Pupils will learn how to calculate the size of a stratified sample and use 'Capture-Recapture' techniques.	and understand how to use the 'AND' and 'OR' rule. Pupils will know how to calculate the probability of combined events using a tree diagram for independent & dependent events and for unconditional & conditional probability. <u>Changing the Subject of a Formula</u> Pupils will know how to change the subject of a one or two-step equation including those involving fractions or small powers of the subject. Pupils will know how to change the subject of a formula or equation where the subject appears on both sides.	solve problems involving compound interest, appreciation and depreciation. <u>Working with Recurring Decimals</u> Pupils will know how to check if a fraction is recurring or terminating. Pupils will be able to convert a fraction to a recurring decimal and vice versa. <u>Simultaneous Equations</u> Pupils will be able to solve a pair of linear simultaneous equations, including ones with fractional and negatives numbers. Pupils will know how to find the solutions of simultaneous equations which have been plotted on a graph. Pupils will be able to form (and solve) simultaneous equations from given information.	Pupils will be able to work out angles of elevation and depression. Pupils will know the exact values of $\sin \theta$, $\cos \theta$ and $\tan \theta$ for 0°, 30°, 45° and 60° and 90°. Pupils will be able to solve complex problems that involve using trig. ratios alongside Pythagoras' theorem, bearings, area & perimeter or other angle properties. <u>Volume & Surface Area</u> Pupils will know how to find the surface area and volume of a range of prisms and 3D shapes. Pupils will be able to use their knowledge to solve a range of problems involving surface area and/or volume..	linear inequalities, find the solutions sets and then compare them to see which values satisfies both inequalities. Pupils will know how to solve algebraically and graphically linear inequalities in two variables. Pupils will be able to show the solutions set of inequalities through regions on a graph. <u>Financial Awareness PDC Course</u> Pupils will role play in 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 unseen costs of maintaining a house and family. Pupils will learn about credit, debt, tax, VAT, income, borrowing and saving. Pupils will study a range of methods used in modern day banking.	problems in a range of context. Pupils will know how to construct a box plot from raw data or from a cumulative frequency curve and interpret the box plot in the context of a problem. Pupils will be able to use cumulative frequency curves and/or box plots to compare two data distributions, giving an interpretation in the context of the situation. <u>Histograms & Frequency Polygons</u> will know how to work out frequency density and draw histograms with equal and unequal class intervals. Pupils will be able to construct a grouped frequency table from a histogram. Pupils will know how to estimate the mean and median from a histogram and how to estimate the frequency of a specified interval anywhere within a histogram. Pupils will be able to construct frequency polygons and interpret them to compare data distributions.
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.	<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.	<u>Evaluating & Using Index Laws</u> Find the numerical value of numbers expressed in index form, including positive, negative and fractional indices.	<u>Working with Surds & Rationalising</u> Understand the terms rational and irrational and the definition of a surd. Understand and use surd notation.	<u>Solving Quadratic Equations</u> Solve quadratic equations by factorising, including equations that need rearranging first. Solve quadratic equations using the quadratic	<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



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>Geometric Sequences</u> 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. <u>Collecting Data</u> 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,	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 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	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 depreciation, using multipliers efficiently. Work out a single multiplier for a repeated proportional change. Find the original amount after a percentage increase or decrease. <u>Working with Recurring Decimals</u> 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. <u>Simultaneous Equations</u> Solve a pair of linear	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. 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. <u>Volume & Surface Area</u> Find the surface area of prisms made from triangles and/or rectangles, including composite prisms.	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>Solving & Graphing Inequalities</u> 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. <u>Financial Awareness PDC Course</u> Role play and model real-life scenarios of managing a household budget, given a range of different variables	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. Find the median, quartiles and IQR using a cumulative frequency graph. Interpret cumulative frequency graphs 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.
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	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.	as unconditional and conditional probability. Estimate the number of times an event will happen from given information and relative frequency. <u>Changing the Subject of a Formula</u> 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 – simple examples.	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.	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.	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.	<u>Histograms & Frequency Polygons</u> 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.
Assessments Formative	Assessment 8 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 9 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.		Assessment 10 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.		Assessment 11 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.
Assessments Summative		Assessment 1 will contain questions designed to assess students learning of the topics taught in the first term.			End-of-Year assessment designed to assess the students learning of all topics taught across the previous terms.	
Homework	Mathswatch: Advanced Revision assignment for assessment 8 Independent homework tasks based on class teacher professional judgement	Mathswatch: Advanced Revision assignment for assessment 9 Independent homework tasks	Core skills homework booklet Independent homework tasks	Mathswatch: Advanced Revision assignment for assessment 10 Independent homework tasks	Mathswatch: Advanced end-of-year revision assignment Independent homework tasks	Mathswatch: Advanced Revision assignment for assessment 11 Core skills homework booklet Independent homework tasks


SUBJECT: MATHEMATICS – Core+

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.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic/Unit	- 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
Knowledge	<u>Indices & Standard Form</u> Pupils will know how to use index laws to simplify expressions and how to evaluate numbers raised to fractional powers and to the power of zero. Pupils will be able to calculate the numerical value of an expression involving multiplication & division of powers and powers of a power. Pupils will know how to change between standard form and ordinary numbers (and vice versa). Pupils will be able to use arithmetic and indices laws with standard form. Pupils will learn how to alter numbers written incorrectly into correct standard form and be able to use a calculator efficiently.	<u>Collecting Data</u> Pupils will be able to identify primary, secondary, discrete, continuous, quantitative and qualitative data. Pupils will know the definitions of sample and population. Pupils will be able to design and use data collection sheets for discrete and continuous grouped data. Pupils will learn about bias and consider ways to eliminate it when sampling. <u>Parallel Lines & Polygons</u> Pupils will know the names of a range of (regular and irregular) polygons. Pupils will be able to calculate the interior angle sum of a polygon and	<u>Pie Charts</u> Pupils will know how to construct pie charts by drawing angles to the nearest degree. Pupils will be able to interpret information from pie charts and be able to compare pie charts including those that represent different totals. <u>Surface Area</u> Pupils will be able to sketch nets of prisms and simple non-prisms so that the surface shapes can be identified. Pupils will know how to find the total surface area of a prism or simple non-prism. Pupils will be able to change between metric measurements of area. <u>Pythagoras' Theorem</u> Pupils will develop their understanding of Pythagoras' theorem and use it to find missing lengths in given right angle triangles. Pupils will be able to justify whether a triangle is right-angled using. Pupils will learn how to calculate the length of line	<u>Venn Diagrams & Set Notation</u> Pupils will know how to complete a Venn diagram from given information and work out probabilities. Pupils will develop their understanding of correct set notation for union, intersection, complement, the empty set, the universal set and brackets { }. <u>Working with Quadratics</u> Pupils will know how to expand and simplify double brackets and how to factorise quadratic expressions in the form $x^2 + bx + c$. Pupils will develop their knowledge of generating points to plot graphs of quadratic functions. Pupils will learn how to identify the turning point and line of symmetry of a quadratic graph.	<u>3D Shapes & Volume</u> Pupils will be able to identify common 3D shapes. Pupils will know how to use the formulae to calculate the volume cubes, cuboids, triangular prisms and how to find the volume of a range of different composite prisms. Pupils will know how to convert between metric measures of volume and capacity. <u>Graphs & Charts</u> Pupils will know how to draw and interpret a range of charts & diagrams including stem & leaf diagrams. Pupils will be able to find the averages and range from a stem and leaf diagram. Pupils will learn how to calculate the total population from a graph, chart or table. Pupils will be able to compare two distributions.	<u>Two Way Tables & Averages</u> Pupils will know how to construct and/or complete two-way tables and frequency trees. Pupils will learn how to find the averages and range from a frequency table and find the range, modal class interval and class interval containing the median from a grouped frequency table. Pupils will learn how to find the estimated mean from a grouped frequency table and appreciate why it is an estimate. <u>Expressions, Equations & Inequalities</u> Pupils will know how to simplify expressions including those with powers and expressions involving brackets. Pupils will be able to factorise fully into single brackets. Pupils will learn how to solve a range of linear equations and how to form and then solve



	<u>Area – Further Quadrilaterals & Circles</u> Pupils will learn how to find the area of trapezia and parallelograms. Pupils will identify the parts of a circle and remember how to find the area and circumference. Pupils will know how to find the perimeter and area of shapes made from partial circles. Pupils will develop their knowledge of finding the radius or diameter given the area of circumference of a circle. <u>Geometric & Quadratic Sequences</u> Pupils will be able to tell the difference between arithmetic, Fibonacci and geometric sequences. Pupils will know how to find missing terms in a Fibonacci sequence. Pupils will continue a quadratic sequence and use the nth term to generate further terms. Pupils will learn how to continue a geometric sequence by finding the common ratio. Pupils will develop their understanding of how to justify whether a term is in a quadratic sequence.	the size of one interior and one exterior angle of a regular polygon. Pupils will know the angle properties of parallel lines: and solve a range of missing angle problems. Pupils will be able to identify congruent shapes by inspection. <u>Real Life Percentages & Multipliers</u> Pupils will be able to use decimal multipliers to find percentages of amounts and values after a percentage increase/decrease. Pupils will learn how to solve percentages problems such as prices after VAT has been added on, profit and loss, simple interest and tax calculations.	segments, given their start and end coordinates or drawn on an axis.	<u>Ratio Contexts</u> Pupils will know how to solve a variety of ratio and proportion problems related to currency conversions, rate of pay and best value.	<u>Financial Awareness PDC Course</u> Pupils will 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/unseen costs of maintaining a house and family. Pupils will learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money.	equations from given information. Pupils will develop their knowledge of answering 'show that' questions. Pupils will know how to solve linear inequalities and represent the solution on a number line. Pupils will develop their knowledge of solving 'double inequalities' and find the value(s) that satisfy them. Pupils will be able to express error intervals for rounding and truncation by using inequality notation <u>Angle Properties</u> Using angle properties and giving reasons for their deductions, pupils will be able to solve a range of geometric problems based on finding missing angles.
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Skills	<u>Indices & Standard Form</u> 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. <u>Area – Further Quadrilaterals & Circles</u> Find the area of trapezia and parallelograms. Name and identify parts of a circle. Recall and use the formulae to find the area and circumference of a circle, giving answers	<u>Collecting Data</u> 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. <u>Parallel Lines & Polygons</u> 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 interior and exterior angles. Use the angle properties of parallel lines: alternate, co-interior and corresponding. Use angle properties to solve a	<u>Pie Charts</u> 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. <u>Surface Area</u> 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. <u>Pythagoras' Theorem</u> 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 use Pythagoras' theorem. Calculate the length of a line segment on a co-ordinate grid.	<u>Venn Diagrams & Set Notation</u> 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 { }. <u>Working with Quadratics</u> 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. <u>Ratio Contexts</u> Use a variety of measures in ratio and proportion problems related to: currency conversions, rate of pay, best value.	<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 composite prisms made from cubes, cuboids and triangular prisms. Convert between metric measures of volume and capacity. <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. Calculate total population from a graph, chart or table. Find the median, mode and range from a stem and leaf diagram. Compare two distributions using appropriate averages and spread, either from raw data or given diagrams, including within a context. <u>Financial Awareness PDC Course</u> Role play and model real-life scenarios of managing a household	<u>Two Way Tables & Averages</u> 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. <u>Expressions, Equations & Inequalities</u> Simplify expressions by adding, subtracting, multiplying and dividing terms including those with powers. Simplify expressions involving brackets. 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.
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	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. <u>Geometric & Quadratic Sequences</u> Continue a quadratic sequence and use the nth term to generate terms. Justify whether a term 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.	range of missing angle problems. Identify congruent shapes by eye. <u>Real Life Percentages & Multipliers</u> 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.			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.	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. <u>Angle Properties</u> 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
Assessments Formative	Assessment 8 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 9 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.		Assessment 10 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 11 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.
Assessments Summative		Assessment 1 contains questions to assess learning of the topics taught in the first term.			End-of-Year assessment designed to assess the students learning of all topics taught across the previous terms.	



Homework	Mathswatch: Core+ revision for assignment 8 Independent homework tasks based on class teacher professional judgement	Independent homework tasks	Mathswatch: Core+ revision assignment 9 Core skills homework booklet Independent homework tasks	Mathswatch: Core+ revision assignment 10 Independent homework tasks	Mathswatch: End—of-year revision assignment Independent homework tasks	Mathswatch: Core+ revision assignment 11 Core skills homework booklet Independent homework tasks
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SUBJECT: MATHEMATICS – Core

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.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic/Unit	- 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
Knowledge	<u>Indices, Order of Operations & Standard Form</u> Pupils will know how to use index laws to evaluate numbers written to the index of a unit fraction or the index zero and how to multiply and divide numbers written in index notation. Pupils will be able to use the hierarchy of operations, including indices. Pupils will develop their understanding of converting between standard form and ordinary numbers (and vice versa). Pupils will be able to use the rules of arithmetic with standard form numbers. Pupils will learn how to use a calculator with standard form.. <u>Area – Circles, Triangles & Quadrilaterals</u> Pupils will be able to find the perimeter and area of a range of 2D shapes. Pupils will be	<u>Collecting Data</u> Pupils will be able to identify primary, secondary, discrete, continuous, quantitative and qualitative data. Pupils will know the definitions of sample and population. Pupils will be able to design and use data collection sheets for discrete and continuous grouped data. Pupils will learn about bias and consider ways to eliminate it when sampling. <u>Parallel Lines & Angles</u> Pupils will be able to find missing angles in triangles & quadrilaterals and use angle properties to find missing angles. Pupils will learn about the angle properties of parallel lines and know how to identify and mark parallel lines on diagrams.	<u>Pie Charts</u> Pupils will learn how to construct pie charts by drawing angles to the nearest degree. Pupils will know how to interpret and compare simple pie charts. <u>Surface Area</u> Pupils will remember the formulae for the area of a rectangle and triangle. Pupils will know how to find the total surface area of a simple prism or non-prism made from rectangular and triangular faces. Pupils will be able to convert between metric measurements of area. <u>Pythagoras' Theorem</u> Pupils will develop their knowledge of using Pythagoras' theorem to find missing lengths in right angle triangles.	<u>Venn Diagrams & Set Notation</u> Pupils will know how to construct a Venn diagram from given information and use it to work out probabilities. Pupils will develop their understanding of how to use correct set notation for union, intersection, complement, the empty set, the universal set and brackets { }. <u>Solving Linear Equations</u> Pupils will know how to write simple expressions or equations from given information. Pupils will be able to solve linear equations. Pupils will develop their knowledge of rearranging equations where the subject appears only once.	<u>3D Shapes & Volume</u> Pupils will be able to identify and name common 3D shapes. Pupils will be able to use the formulae to calculate the volume of a cube, cuboid, triangular prism and a range of different simple composite right-prisms. <u>Graphs & Charts</u> Pupils will be able to draw and interpret a range of diagrams including pictograms, bar charts, dual & composite bar charts, bar-line graphs, vertical line charts, line graphs, time series graphs, histograms with equal class widths and stem and leaf diagrams. Pupils will know how to find the greatest and least value from a bar chart or table. Pupils will be able to calculate total population from a graph, chart or table and find the averages &	<u>Two Way Tables</u> Pupils will be able to complete two-way tables and frequency trees from given information. <u>Ratio & Proportion Revisit</u> Pupils will be able to write a ratio to describe a situation. Pupils will know how to simplify ratios and learn how to share a quantity in a ratio. Pupils will be able to change between fractions and ratios, convert between currencies, how to manipulate recipes and work out which product offers the best value for money. Pupils will know how to compare a scale model to a real-life object and solve problems using the unitary method. <u>Working with Expressions Revisit</u> Pupils will remember how to simplify expressions including terms



	able to identify the parts of a circle and recall use of the formulae to find the area and circumference of a circle. <u>Sequences & Nth Terms</u> Pupils will know how to describe the term-to-term rule in a sequence and use it to find missing terms or continue a sequence. Pupils will recognise sequences from diagrams and be able to continue the sequence. Pupils will develop their knowledge of square and cub number patterns and be able to generate arithmetic sequences when given the term-to-term rules. Pupils will learn how to find the nth term of a linear sequence and use it to find a specific term in a sequence and to test if a number appears in a sequence.	<u>Real Life Percentages</u> Pupils will be able to calculate percentages of amounts and values after a percentage increase/decrease. Pupils will learn how to solve percentages problems such as prices after VAT has been added on, profit & loss and simple interest.		<u>Ratio Contexts</u> Pupils will develop their knowledge of solving a variety of ratio and proportion problems related to currency conversions, rate of pay and finding the best value.	range from a stem and leaf diagram. <u>Financial Awareness PDC Course</u> Pupils will role play real-life scenarios of managing a household budget, given a range of different variables regarding gross and net wages, unexpected bills and the seen/unseen costs of maintaining a house and family. Pupils will learn about credit, debt, tax, VAT and other issues related to job salaries, income, borrowing, saving and spending money. Pupils will look at the range of methods used in modern day banking.	with powers and/or brackets. Pupils will develop deepen their knowledge how of fully factorise an expression into a single bracket.
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 hierarchy of operations, including powers. Convert between standard form and ordinary	<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	<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 $\frac{1}{2}$ and $\frac{1}{4}$ <u>Surface Area</u> Recall and use the formulae for the area of a rectangle and triangle. Find the total surface area of a	<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 { } -	<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>	<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.



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 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. <u>Sequences & Nth Terms</u> 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.	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: alternate, co-interior and corresponding. Use angle properties to solve a range of simple missing angle problems. <u>Real Life Percentages</u> 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.	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.	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 appears only once. <u>Ratio Contexts</u> Use a variety of measures in simple ratio and proportion problems related to: currency conversions, rate of pay, best value.	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>Financial Awareness PDC Course</u> 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.	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 <u>Working with Expressions Revisit</u> Simplify expressions by adding, subtracting, multiplying and dividing terms including those with powers. Simplify expressions involving brackets. Factorise fully into single brackets.
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	Generate arithmetic sequences, given term-to-term rules as well as sequence of square and cube numbers. Find the n th term of a linear sequence. Use the n th term to find a specific term in a sequence and to test if a number appears in a sequence, in simple cases.				Look at the range of methods used in modern day banking.	
Assessments Formative	Assessment 8 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.		Assessment 9 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 10 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.	End-of-topic quizzes. Regular use of whiteboards in lessons.	Assessment 11 Open book End-of-topic quizzes. Regular use of whiteboards in lessons.
Assessments Summative		Assessment 1 will contain questions designed to assess students learning of the topics taught in the first term.			End-of-Year assessment designed to assess the students learning of all topics taught across the previous terms	
Homework	Mathswatch: Core revision assignment 8 Independent homework tasks based on class teacher professional judgement	Core skills homework booklet Independent homework tasks based on class teacher professional judgement	Mathswatch: Core revision assignment 9 Independent homework tasks based on class teacher professional judgement	Mathswatch Core revision assignment 10 Independent homework tasks based on class teacher professional judgement	Mathswatch: Core end-of-year revision assignment Independent homework tasks based on class teacher professional judgement	Mathswatch: Core revision assignment 11 Core skills homework booklet Independent homework tasks based on class teacher professional judgement