

NAME		TEACHER				
My GCSE Target Grade is		End of Cycle Teacher Assessment Please circle				
		SAE	AE	E	BE	SBE
End of unit assessment type		Your end of topic assessment will be a written exam.				

YEAR 8 CYCLE 1: NUMBER, ALGEBRA, 3D SHAPES

Knowledge		Prior knowledge	End of topic
7 to 9	Prime Factors - I can use index notation and write a number as a product of its prime factors		
	Indices – I can calculate using the laws of indices, including with positive and negative powers and for multiplying and dividing		
	Estimation – I can estimate calculation by rounding to 1 significant figure		
	Expanding & Factorising – I can expand and factorise expressions involving powers		
	Substituting and solving equations – construct and solve equations		
6	Calculations - I can add and subtract decimals and apply this to money problems		
	Powers & Roots – I can calculate using squares & square roots, cubes & cube roots, use index notation and estimate the square root of a number		
	Substitution – I can substitute into formulas involving powers, roots and brackets		
	Substitution 2 – I can substitute into algebraic expressions and form expressions		
	Expanding Brackets – I can multiply out double brackets and collect like terms		
	Area – I can find the area of a triangle, parallelogram and trapezia including with compound shapes and apply to problems involving money		
	3D shapes – I can sketch nets of 3D solids and find the volume of cubes and cuboids		
Surface Area - I can calculate the surface area of cubes and cuboids			
5	Calculations – I can add, subtract, multiply and divide numbers with more than 3 digits		
	Negative Numbers – I can add, subtract, multiply and divide positive and negative numbers		
	Ratio – I can work with ratios, find equivalent ratios and solve word problems involving ratio		
	3D Shapes – I can identify the properties and draw the net of a 3D shape		
	Measures – I can solve problems involving units of length, area and capacity		

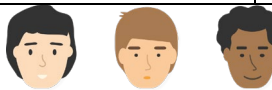
LEARNING TOOLS

KEY CONCEPTS	Indices / Powers	What is a power? (Superpower?)	
	Area / Volume		
KEY QUESTIONS	Factorising is the opposite of _____	Where have you heard substitution before?	What are the two systems of measurement?
KEY EQUATION		Area of a Parallelogram =	

YEAR 8 CYCLE 1: NUMBER & ALGEBRA / VOLUME 3D SHAPES

	Skills	Prior knowledge	End of topic
7 to 9 Delta	N6 - use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5		
	N14 - estimate answers; check calculations using approximation and estimation		
	N15 - round numbers and measures to an appropriate degree of accuracy		
	A3 - understand and use the concepts and vocabulary of expressions, equations, formulae, <u>identities</u> , inequalities, terms and factors		
6 Theta	N4 - use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation		
	N3 - recognise and use relationships between operations, including inverse operations and be able to use BIDMAS		
	G16 - know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms (including cylinders)		
	G17 - know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2 ; calculate: perimeters of 2D shapes, including circles; areas of circles		
5 Pi	R4 - use ratio notation, including reduction to simplest form		
	R5 - divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio		
	G1 - use conventional terms and notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries		
	G12 - identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres		
	G13 - interpret plans and elevations of 3D shapes		

EVERYBODY READS... IN MATHS!

KEY WORDS	Sketch	Surface Area	Prime Factor	Diameter	Prism
PROBLEM OF THE CYCLE	 <p>Bill, David, and Joey are the 3 finalists in a hot dog eating contest.</p> <ul style="list-style-type: none"> • Bill did not eat the fewest hot dogs • David did not eat the greatest number of hot dogs. • Joey ate more hot dogs than Bill. <p>Who won the contest by eating the most hot dogs?</p>				
PRE-LEARNING	7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> • 18: Addition • 19: Subtraction • 41: Adding & subtracting positive & negative numbers • 329: Simplify ratios • 833 Nets 	6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> • 101: Square and cube roots • 156: Collecting like terms • 162: Expand double brackets • 780: Substitution • 553: Area of shapes 	5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> • 29: Prime factorisation • 130: Estimation • 160: Expanding single brackets • 168: Factorising expressions 		
CAREERS	<ul style="list-style-type: none"> • Architectures: Architects will often turn to diagrams floor plans to estimate the resources needed to complete a construction of a building. • Banking: Number sense and a facility with mathematical concepts is especially useful in banking. We use math for budgeting, spending, saving, and investing. • Builder: Builders construct and repair houses and buildings. They often specialise in one or a handful of areas of building work, for example plastering, fitting bathrooms, installing windows or laying floors. 				

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YEAR 8 CYCLE 2: ALGEBRA, DATA, 2D/3D SHAPES

Knowledge		Prior knowledge	End of topic
7 to 9	Surface Area of Prisms – I can find the surface area of different prisms (including triangular and hexagonal)		
	Volume of Prisms – I can find the volume of a prism (including triangular and hexagonal)		
	Circles – I can name the different parts of a circle and find the circumference		
	Cylinders – I can calculate the surface area and volume of a cylinder		
	Direct proportion and Rates of change - Recognise when values are in direct proportion. Interpret real-life graphs.		
	Distance-time graphs - Use distance–time graphs to solve problems.		
6	Powers - I can simplify algebraic powers and substitute into formulae involving powers		
	Expressions & Brackets – I can form algebraic expressions and expand single brackets (including with negative numbers and powers)		
	Double Brackets – I can expand double brackets and collect like terms and apply to problems involving shapes		
	Re-arranging Formula – I can change the subject of a formula and substitute		
	Factorising – I can factorise linear expressions & use factorising to simplify simple fractions		
	Solving Equations 2 – I can solve two step equations using a function machine and can also use the balancing method		
	Distance-Time Graphs – I can interpret a distance-time graph and plot data from a question		
	Line Graphs – I can plot line graphs from a table of data and interpret / make comparisons		
5	Expressions – I can simplify expressions by collecting like terms (including with powers)		
	Solving Equations 1 – I can solve one step equations by finding the inverse operation and using a function machine		
	Brackets – I can use brackets with numbers and letters		
	Data Surveys – I can plan a survey and collect data and group data into equal class intervals		
	Bar Charts – I can interpret and draw bar charts for one / more than one set of data		

LEARNING TOOLS

KEY CONCEPT	Expression	What is the difference between an expression and an equation?		
KEY QUESTIONS	What is important when drawing a Bar Chart ?	What is the value of π ?		
KEY EQUATION		πr^2 is the formula for the _____ of a circle		

YEAR 8 CYCLE 2: EQUATIONS & PRESENTING DATA

	Skills	Prior knowledge	End of topic
7 to 9 Delta	G9 - identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, <u>tangent, arc, sector and segment</u>		
	G13 - <u>construct and</u> interpret plans and elevations of 3D shapes		
	G16 - know & apply formulae to calculate: volume of prisms (including cylinders)		
	G17 - know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2 ; calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; <u>surface area and volume of spheres, pyramids, cones and composite solids</u>		
6 Theta	A4 - simplify and manipulate algebraic expressions: <ul style="list-style-type: none"> • collecting like terms • multiplying a single term over a bracket • taking out common factors 		
	A5 - understand and use formulae; rearrange formulae to change the subject		
	A7 - interpret simple expressions as functions with inputs and outputs; ; interpret the reverse process as the 'inverse function'		
5 Pi	S2 - interpret and construct tables, charts and diagrams, including bar charts		
	A2 - substitute numbers into formulae and expressions, including scientific formulae		

EVERYBODY READS... IN MATHS!

KEY WORDS	Inverse	Annual	Parallel	Correlation	Diagonal
PROBLEM OF THE CYCLE	<p>Can the centre of the grid be filled with one of the three shapes?</p>				
PRE-LEARNING	7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> • 548: Perimeter • 553: Area of shapes • 882: Properties of 2D-shapes • 179: solving 2-step equations 	6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> • 24: Order of operations • 27: factors of a number • 156: Collecting like terms • 160: expanding single bracket • 780: Substitution 	5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> • 24: Order of operations • 156: Collecting like terms • 401: Tally Charts 		
CAREERS	<ul style="list-style-type: none"> • Statisticians: Bar charts and line graphs are generally used to study data and make comparisons between 2 or more set of data sets. • Data analysts identify trends, create models, collect numerical information and present results. • Geographer: Create and modify maps, graphs, or diagrams, using geographical information software and related equipment, and principles of cartography, such as coordinate systems, longitude, latitude, elevation, topography, and map scales. • Architects: Design new buildings and the spaces around them using the concepts learnt in are and volume. • Computer programmers write, modify, and test code and scripts that allow computer software and applications to function properly. They turn the designs created by software developers and engineers into instructions that a computer can follow. 				

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YEAR 8 CYCLE 3: DECIMALS / ANGLES / TRANSFORMATIONS

Knowledge		Prior knowledge	End of topic
7 to 9	Transformations 1 - I can describe and carry out both Translations & Reflections		
	Rotation – I can describe and carry out rotations around a point and on a coordinate axis		
	Enlargement – I can enlarge a shape using positive and negative / fractional scale factors		
	Combining transformations – Use a combination of transformations		
	Recurring Decimals – I can recognise fractional equivalents to important recurring decimals and change a recurring decimal into a fraction		
	Percentage Change – I can calculate percentages, work out an original quantity before a percentage increase or decrease and calculate compound interest		
6	Decimals – I can round whole numbers and decimals and order positive & negative decimals		
	Multiplication – I can multiply numbers with more than 3 digits and multiply decimals with up to two decimal places		
	More Decimals – I can add / subtract decimals of any size and divide by 0.1, 0.5 and 0.01		
	Ratio and Proportion with decimals – Solving ratio problems involving decimals		
	Angles – I can use parallel lines facts (alternate / corresponding) to find unknown angles		
	Exterior & Interior Angles – I can calculate the sum of the interior and exterior angles of a polygon and use this to find individual angles		
	Angle Problems - I can find unknown angles in polygons using a combination of angle facts		
	Angle Problems with Algebra – I can find unknown angles by forming and solving equations		
5	Decimals - I can add and subtract decimals up to three decimal places		
	Multiplying Decimals - I can multiply decimals up to two decimal places		
	Angles – I can use a protractor to measure and draw acute, obtuse and reflex angles		
	Angles in Triangles – I can work out the size of unknown angles in a triangle		
	Drawing Triangles – I can accurately draw different triangles using a ruler and protractor		
	Designing Nets – I can accurately draw a net of a 3D shape		

LEARNING TOOLS

KEY CONCEPTS	Ordering Decimals	To order numbers we must first be able to compare.		
	Exterior Angles	Interior and exterior angles add up to make _____		
KEY QUESTIONS	What equipment do we need to draw a triangle accurately?	How would you describe a rotation?	How many nets of a cube are there?	
KEY EQUATION		<i>Volume of a Pyramid = Area of Base x Perpendicular Height</i>		

YEAR 8 CYCLE 3: DECIMALS / ANGLES / TRANSFORMATIONS

	Skills	Prior	End of
7 to 9 Delta	R2 - use scale factors, scale diagrams and maps		
	G7 - identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including <u>fractional and negative scale factors</u>)		
	G24 - describe translations as 2D vectors		
	N10 - work interchangeably with terminating decimals and their corresponding fractions and change recurring decimals into their corresponding fractions and vice versa		
	R16 - <u>set up, solve and interpret the answers in growth and decay problems, including compound interest</u>		
6 Theta	N15 - round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places)		
	G3 - apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; understand and use alternate and corresponding angles on parallel lines; derive and use the sum of angles in a triangle		
	G4 - apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language		
5 Pi	N1 - order positive and negative decimals; use the symbols =, ≠, <, >, ≤, ≥		
	G1 - use notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries		
	G6 - <u>apply angle facts, triangle congruence, the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs</u>		

EVERYBODY READS... IN MATHS!

KEY WORDS	Discount	Pyramid	Quadrilateral	Scale Factor	Enlargement
PROBLEM OF THE CYCLE	<p style="text-align: center;">Which triangle has an area of 1?</p> <div style="text-align: center;"> </div>				
PRE-LEARNING	7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> - 55: Convert simple decimals to percentages - 73: Convert fractions to decimals 1 - 75: Convert fractions to percentages 1 - 84: Find percentages of amounts 	6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> - 18: Addition - 19: Subtraction - 21: Long Multiplication - 17: Round numbers to the nearest 10, 100, 1000 - 56: Round decimal numbers - 455: types of Angles 	5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> - 18: Addition - 19: Subtraction - 21: Long Multiplication - 455: types of Angles 		
CAREERS	<ul style="list-style-type: none"> • Astronomers use angles to measure the size of the object in the sky. • Decimals: These are useful in careers involving finance (e.g. accountants will often use FDP to calculate profit and loss). Retail workers will often use fractions and percentages in sales to work out new prices of items. Chefs/bakers may use them to work out how many quantities will be needed for different numbers of people. • Architecture (e.g. to assure symmetry and balance when designing a building). • Robotics engineers use programming in conjunction with mathematical constructions and shape transformations to design and build machines to do automated jobs in industries like manufacturing, aerospace and medicine. 				

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YEAR 8 CYCLE 4: NUMBER SKILLS / CONSTRUCTIONS

	Knowledge	Prior knowledge	End of topic
7 to 9	Accurate Drawings – I can accurately draw triangles using a ruler and protractor		
	Constructing Shapes – I can draw accurate nets of 3D solids and construct triangles using only a ruler and a compass		
	Constructions 1 – I can bisect a line using a ruler and a compass and construct a perpendicular bisector of a line segment		
	Constructions 2 – I can bisect angles user a ruler and a compass (and draw 60° / 30° angles)		
	Loci – I can draw a locus of a point and use loci to solve problems		
6	Adding and subtracting fractions – I can add and subtract fractions with any size denominator		
	Multiplying fractions – I can multiply integers and fractions by a fraction		
	Fractions / Decimals / Reciprocals – I can convert fractions to decimals and write one amount as a fraction of another. Find the reciprocal of a number.		
	Dividing fractions - Divide integers and fractions by a fraction.		
	Mixed Numbers – I can work with the four operations and mixed numbers.		
5	Squares, Cubes & Roots – I can calculate squares and square roots, mentally and using a calculator and cubes and cube roots in the same way		
	Brackets & Indices – I can carry our calculations involving brackets and square numbers and use the appropriate keys on a calculator		
	Lowest Common Multiple – I can find the LCM and use it to solve problems (e.g. with money / time)		
	Highest Common Factor – I can find the highest common factor (HCF) of a pair of numbers		
	Prime Factor Trees – I can use prime factor decomposition (factor tree) to find the prime factors of any number than 150		
	Angles – I can measure reflex angles & use angle properties to solve problems with shapes		

LEARNING TOOLS

KEY CONCEPTS	Constructions	A construction is a shape or diagram that is		
KEY QUESTIONS	When is it useful to find the Highest Common Factor?		What is a number sequence?	
KEY EQUATION		Sum of Interior Angles in a Polygon (n-2) x 180		

YEAR 8 CYCLE 4: NUMBER SKILLS / CONSTRUCTIONS

	Skills	Prior knowledge	End of topic
7 to 9 Delta	G1 - points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons		
	G2 - use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle)		
	G13 - <u>construct and</u> interpret plans and elevations of 3D shapes		
6 Theta	N8 - calculate exactly with fractions		
	N10 - work interchangeably with terminating decimals and their corresponding fractions and change recurring decimals into their corresponding fractions and vice versa		
	G4 - apply the properties of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles		
5 Pi	N3 - recognise and use relationships between operations, including inverse operations and be able to use BIDMAS		
	N4 - use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation		
	N6 - use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5; estimate powers and roots of any given positive number		

EVERYBODY READS... IN MATHS!

KEY WORDS	Prime Factor	Mixed Number	Perpendicular	Bisect	Denominator
PROBLEM OF THE CYCLE	<p>Is it possible to fill each square in with an arithmetic operation (+ - ÷ x) so that this becomes a true equation?</p> $10 \square 10 \square 10 \square 10 = 101$				
Pre-Learning	7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> - 455: Types of angles - 477: Angles on a straight line - 812: Angles around a point - 485: Angles in a triangle - 458: Measuring angles 	6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> - 59: Generate equivalent fractions - 61: Simplify fractions - 63: Improper fractions to mixed numbers - 64: Mixed numbers to improper fractions - 34: Lowest common multiple (listing) 	5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> - 27: Factors of a number - 33: Multiple of a number - 24: Order of operations 1 (positive integers) 		
Careers	<ul style="list-style-type: none"> • Drawing/measuring angles: In engineering, surveying and architecture, protractors are regularly used. • Fractions: In the catering industry, for example, chefs/bakers may use these to work out the quantity of ingredients when cooking/baking. • Angles: Used in the fields of astronomy (e.g. to measure the size of an object in the sky), architecture (e.g. to assure symmetry and balance when designing a building). 				

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YEAR 8 CYCLE 5: NUMBER / PROBABILITY / ALGEBRA

Knowledge		Prior knowledge	End of topic
7 to 9	Probability - I can calculate and compare probabilities and decide if a game is fair		
	Experimental Probability – I can carry out a probability experiment, estimate probability using the data collected and work out expected results		
	Probability Diagrams – I can list all the possible outcomes of one or two events, using <i>Sample Space Diagram</i> or a <i>Venn Diagram</i>		
	Tree Diagrams – I can use tree diagrams to find the probabilities of two or more events		
	Bearings – I can measure and use bearings & draw diagrams to scale using bearings		
	Congruent & Similar Shapes – I can identify congruent and similar shapes and use similarity to solve problems in 2D shapes		
6	Real Life Graphs – I can plot a real life graphs and read values to solve problems		
	Straight Line Graphs – I can plot a straight line graph and work out its gradient		
	Equation of a Line – I can plot the graphs of any linear function, find the midpoint of a line segment and write equations in the form $Y=MX+C$		
	Fractions & Decimals - I can convert simple fractions to decimals and recognise recurring and terminating decimals		
	Equivalent Proportions – I can use fractions, decimals and percentages when working with equivalence problems (best value)		
	Percentages – I can work out one number as a percentage of another and percentage increase and decrease		
5	Sequences – I can recognise, describe and continue number sequences and shape patterns		
	Nth Term – I can extend sequences using the term-term rule and find the Nth Term		
	Special Sequences – I can recognise geometric, Fibonacci & triangular number sequences		
	Fractions – I can compare, simplify and identify equivalent fractions		
	Fractions of Amounts – I can find a fraction of a quantity and multiply a fraction by a whole number		
	Fraction Arithmetic – I can add & subtract fractions and write a number as a fractions of another number		

LEARNING TOOLS

KEY QUESTIONS	What is a fraction?	Percent means out of ____	How do we plot a straight line graph?

KEY EQUATION	$y=mx+c$ (where m is the gradient and c is the y intercept)
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YEAR 8 CYCLE 5: NUMBER / PROBABILITY / GRAPHS

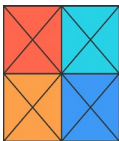
Skills

Prior knowledge

End of topic

7 to 9	P1- record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees		
	P6 - enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams		
	P8 - <u>calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions</u>		
	G5 - <u>use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)</u>		
	G7 - identify, describe and construct congruent and similar shapes		
	G15 - measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings		
6	A9 - plot graphs of equations that correspond to straight-line graphs in the coordinate plane; <u>use the form $y = mx + c$ to identify parallel and perpendicular lines</u>		
	N10 - work interchangeably with terminating decimals and their corresponding fractions		
	N12 - interpret fractions and percentages as operators		
	R9 interpret percentages and percentage changes as a fraction or a decimal; express one quantity as a percentage of another; compare two quantities using percentages; work with percentages greater than 100%; solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics		
5	A23 -generate terms of a sequence from either a term-to-term or a position-to-term rule		
	A24 -recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, <u>Fibonacci type sequences</u>		
	A25 - deduce expressions to calculate the nth term of linear sequence		
	R3 - express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1		
	N11 -identify and work with fractions in ratio problems		

EVERYBODY READS... IN MATHS!

KEY WORDS	Recurring	Fibonacci	Independent Events	Congruent
PROBLEM OF THE CYCLE	How many triangles are there in this figure? <div style="text-align: center;">  </div>			
PRE-LEARNING	7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> - 351: Probability of single events - 356: Experimental probability and relative frequency - 383: Venn diagrams and probability - 363: Probability trees - 492: Bearings - 680: Congruence 	6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> - 895: Drawing real-life graphs - 220: Striaight line graphs - 73: Convert fractions to decimals 	5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> - 198: nth term - 263: Fibonacci sequences - 264: Geometric sequences - 59: Equivalent fractions - 77: Fractions of amount - 66: Add/subtract fractions - 68: Multiplying fractions - 70: Dividing fractions 	
CAREERS	<ul style="list-style-type: none"> - Finance: careers involving finance may use statistics/probability for risk analysis - Statisticians: Probability will often be used by people in the statistitics field, e.g. to find the chances of contracting a specific disease - Agriculture: sequences can be used to help students to predict for instance, how many different plants are likely to grow over a specific period of time 			

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YEAR 8 CYCLE 6: PROBABILITY, STATISTICS & ALGEBRA

Knowledge		Prior knowledge	End of topic
7 to 9	Graphs – I can plot linear graphs using a table and find the y intercept of a straight line <i>Teach coordinates, midpoint of line segment, recognising lines parallel to axis, $y=x$, $y=-x$</i>		
	Gradient – I can find the gradient of a straight line and plot graphs using only the gradient and y intercept		
	$y = mx + c$ - Use $y = mx + c$, Find the equation of a straight-line graph.		
	Parallel and perpendicular lines - Identify parallel and perpendicular lines.		
	Non-linear graphs - Plot and use non-linear graphs.		
6	Pie Charts - I can draw and interpret pie charts		
	Presenting Data – I can draw and interpret two way tables and apply to worded problems		
	Mean (Grouped Data) – I can calculate the mean from a simple & grouped frequency table		
	Stem & Leaf Diagrams – I can draw and interpret stem and leaf diagrams and find the mode, median and range and make comparisons between sets of data		
	Scatter Graphs – I can draw scatter graphs, identify types of correlation and draw a line of best fit to estimate values		
	Comparing data - Compare data using averages and range, including mean calculated from frequency table.		
5	Language of Probability – I can use the language of probability and use a probability scale		
	Outcomes – I can find all the possible outcomes of an event and calculate the probability of an event not happening		
	Probability calculations - Learn and use probability notation. Calculate the probability of an event not happening. Find all the possible outcomes of two simple events.		
	Experimental Probability – I can use data from an experiment to estimate probabilities		


LEARNING TOOLS

KEY CONCEPTS	Gradient	What does the gradient represent?	
	Mean	How do we find the mean of a set of numbers?	
KEY QUESTIONS	What angle does a set of perpendicular lines form?	What is the reverse process of expanding brackets?	If two variables have no correlation, what does that say about them?
	KEY EQUATION		$M : \left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$

YEAR 8 CYCLE 6: STATISTICS & ALGEBRA

	Skills	Prior knowledge	End of topic
7 - 9 Delta	A9 - plot graphs of equations that correspond to straight-line graphs in the coordinate plane; <u>use the form $y = mx + c$ to identify parallel and perpendicular lines; find the equation of the line through two given points or through one point with a given gradient</u>		
	A10 - identify and interpret gradients and intercepts of linear functions		
	A12 - recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic function		
	R14 - interpret the gradient of a straight line graph as a rate of change		
6 Theta	S2 - interpret and construct tables, charts and diagrams and pie charts		
	A9 - plot graphs of equations that correspond to straight-line graphs in the coordinate plane; <u>use the form $y = mx + c$ to identify parallel and perpendicular lines; find the equation of the line through two given points or through one point with a given gradient</u>		
	R10 - solve problems involving graphical and algebraic representations		
5 Pi	P1 -record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees		
	P3 - relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale		
	P4 - apply the property that the probabilities of a set of outcomes sum to one		
	A1 - use and interpret algebraic manipulation, including: <ul style="list-style-type: none"> • ab in place of $a \times b$ • $3y$ in place of $y + y + y$ and $3 \times y$ • a^2 in place of $a \times a$, a^3 in place of $a \times a \times a$, a^2b in place of $a \times a \times b$ • a/b in place of $a \div b$ • brackets 		
	A2 -substitute numerical values into formulae and expressions		

EVERYBODY READS... IN MATHS!

KEY WORDS	Comparison	Gradient	Correlation	Median	Equation
PROBLEM OF THE CYCLE	A person is driving past a clock tower. The clock seen in the car's side-view mirror is this: <div style="text-align: center;">  </div> What is the actual time?				
PRE-LEARNING	Y8 Cycle 6 HegartyMaths Videos: <ul style="list-style-type: none"> - 220: Straight-line graphs - 214: Straight-line graphs (parallel) - 427: Draw/interpret pie charts - 422: Two-way tables - 412: Grouped frequency tables - 430: Stem-and-leaf diagrams - 453: Scatter diagrams - 351 – Probability of single events 				
CAREERS	<ul style="list-style-type: none"> - Statisticians: pie charts can be used to identify trends in data for example - University lecturer: When supervising research, lecturers will often turn to diagrams such as pie charts as a way of presenting data. - Data analyst: The mean, median, mode and range are often used to them analyst identify trends within data. - Psychologists: Using measure in central tendency allow psychologists to identify trends in human behaviour. Furthermore, they use statistical tests to identify if two groups differ significantly. - Pilots: Coordinates may be used to work out the journey to their destination. 				