



Cardinal Newman School: Medium Term Plan Maths Year 7

Year 7	Half Term 1.1				
Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
<p>Calculator skills:</p> <ul style="list-style-type: none"> - To use a calculator to change between fractions, decimal, percentages. - To use a calculator to work with powers and roots. - To use a calculator to work out percentages and fractions of amounts. - To use a calculator to calculate with fractions. - To use a calculator effectively. 		Y7 Calculator units: Autumn 1.2 - Perimeter	<ul style="list-style-type: none"> • use a calculator and other technologies to calculate results accurately and then interpret them appropriately 	<ul style="list-style-type: none"> - Calculate - Power - Root - Evaluate - Value 	N44 N22b
<p>Ratio:</p> <ul style="list-style-type: none"> - To use ratio notation and simplify ratios. - To link ratios and fractions. - To divide quantity into a given ratio. - To solve ratio problems given a part. - To solve ratio problems given the difference between parts. - To solve real life problems involving ratios (recipe problems) - To solve problems with currency conversion. 	KS2: Introduction of ratio	Y8 Autumn 1.1 - Ratio	<ul style="list-style-type: none"> • identify and work with fractions in ratio problems <p>Ratio, proportion and rates of change</p> <ul style="list-style-type: none"> • use ratio notation, including reduction to simplest form • divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio • understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction • relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions 	<ul style="list-style-type: none"> - Ratio - Simplify - Part - Difference - Convert 	R1a R1b R5a R5b



Pitstop: Ratio

Pitstop: Ratio					
Year 7	Half Term 1.2				
Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
Angles: <ul style="list-style-type: none"> - To classify, measure and draw angles. - To use simple angle rules. - To investigate the angle properties of special triangles. - To investigate the angle properties of special quadrilaterals. - To solve multi-step angle problems 	KS2: Geometry - Angles	Y8 Spring 2.2 – Angles	<ul style="list-style-type: none"> • apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles • derive and illustrate properties of triangles, quadrilaterals, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies 	<ul style="list-style-type: none"> - Angle - Acute - Obtuse - Reflex - Isosceles - Equilateral - Scalene - Quadrilateral 	G10a G10b G10c G13 G14 G16 G17

Pitstop: Angles

Autumn Assessment

Algebraic Manipulation: <ul style="list-style-type: none"> - To add and subtract with negative numbers - To multiply and divide with negative numbers - To form algebraic expressions. - To substitute values into simple algebraic expressions. - To simplify algebraic expressions. - To multiply out a single bracket. - To expand multiple single brackets and simplify. - To factorise into a single bracket. 	KS2: Language of Algebra, Formulae	Y8 Autumn 1.1 – Algebraic Manipulation	<ul style="list-style-type: none"> • use and interpret algebraic notation • substitute numerical values into formulae and expressions, including scientific formulae • simplify and manipulate algebraic expressions to maintain equivalence 	<ul style="list-style-type: none"> - Expression - Substitute - Expand - Factorise - Simplify 	A2 A3 A4 A6 A7a A7b A8 A9 A10
Solving Equations: <ul style="list-style-type: none"> - To solve one-step equations. - To solve two step equations - To solve equations with brackets. - To solve equations with fractions. 	KS2: Missing number Problems Y7 Algebraic Manipulation	Y8 Autumn 1.2 – Solving Equations	<ul style="list-style-type: none"> • understand and use the concepts and vocabulary of expressions, equations • use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement) 	<ul style="list-style-type: none"> - Equation - Solve - Brackets 	A12 A17 A19a



			<ul style="list-style-type: none"> recognise and use relationships between operations including inverse operations 		
Pitstop: Algebraic Manipulation & Solving Equations					
Year 7		Half Term 2.1			
Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
Area and Perimeter: <ul style="list-style-type: none"> To calculate the area of rectangles and parallelograms To calculate the area of triangles To calculate the area of parallelograms and trapezia. To calculate the area of compound shapes To find the perimeter of shapes Worded problems 	KS2: Perimeter and Area of Rectangles, Parallelograms and Triangles	Y8 Autumn 1.2 – Volume	<ul style="list-style-type: none"> derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia calculate and solve problems involving: perimeters of 2-D shapes and composite shapes interpret mathematical relationships both algebraically and geometrically. 	<ul style="list-style-type: none"> Area Perimeter Rectangle Triangle Parallelogram Trapezium Compound Shape 	G8a G8b G9 G20a G20b G20c G20d G24
Circles: <ul style="list-style-type: none"> To calculate the circumference of circles To calculate the area of circles To calculate the perimeter and area of semi-circles To solve compound shape problems with semi-circles 	KS2: Perimeter and Area of Rectangles, Parallelograms and Triangles Y7: Area and Perimeter	Y8 Autumn 1.2 – Volume	<ul style="list-style-type: none"> calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes interpret mathematical relationships both algebraically and geometrically. 	<ul style="list-style-type: none"> Circumference Diameter Radius Area Semi-circle 	G2 G22a G22b G24
Pitstop: Area, Perimeter & Circles					
Graphs: <ul style="list-style-type: none"> To plot and read coordinates. To plot the graphs of vertical and horizontal lines and state their equations. To plot simple linear graphs. 	KS2: Coordinates	Y8 Spring 2.1 – Graphs	<ul style="list-style-type: none"> work with coordinates in all four quadrants recognise, sketch and produce graphs of linear functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane 	<ul style="list-style-type: none"> Coordinate Linear Vertical Horizontal 	A1a A1b A5 A14a
Transformations: <ul style="list-style-type: none"> To work with line and rotational symmetry. To reflect shapes. 	KS2: Rotation and Reflection	Y8 Spring 2.1 – Transformations	<ul style="list-style-type: none"> describe, sketch and draw using conventional terms and notations: 	<ul style="list-style-type: none"> Line Symmetry 	G3 G4a G4b



<ul style="list-style-type: none"> - To describe reflections - To rotate shapes. - To describe rotations 	Y7: Graphs		<p>polygons that are reflectively and rotationally symmetric</p> <ul style="list-style-type: none"> • identify properties of, and describe the results of rotations and reflections applied to given figures 	<ul style="list-style-type: none"> - Rotational Symmetry - Order - Reflection - Rotation 	G6 G7
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Pitstop: Transformations & Graphs

Year 7 **Half Term 2.2**

Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
<p>Sequences:</p> <ul style="list-style-type: none"> - To investigate different types of sequences. - To generate and describe rules for sequences - To generate sequences given an algebraic rule. - To find the nth term of a linear sequence. 	<p>KS2: Sequences – continuing and describing</p> <p>Y7 Algebraic Manipulation</p>	<p>Y8 Autumn 1.2 – Sequences</p>	<ul style="list-style-type: none"> • generate terms of a sequence from either a term-to-term or a position-to-term rule • recognise arithmetic sequences and find the nth term • recognise...and appreciate other sequences that arise. 	<ul style="list-style-type: none"> - Square number - Cube number - Arithmetic Sequence - Fibonacci Sequence - Nth term - Linear Sequence 	<p>A11a A11b A11c A22 N12</p>

Spring Assessment

<p>Charts and Diagrams:</p> <ul style="list-style-type: none"> - To work with tally charts - To work with Pictograms. - To draw bar charts - To interpret bar charts - To work with compound and dual bar charts. - To complete and interpret two-way tables 	<p>KS2: Charts (bar, tally, pictogram)</p>	<p>Y8 Summer 3.1 – Charts and Diagrams</p>	<ul style="list-style-type: none"> • describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data • construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts... and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data 	<ul style="list-style-type: none"> - Frequency - Tally - Pictogram - Bar Charts - Compound Bar Chart - Dual Bar Chart - Two-way table 	<p>S1a S1b S2a S2b P4</p>
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			<ul style="list-style-type: none"> describe simple mathematical relationships between two variables (bivariate data) 		
Pitstop: Sequences & Charts and Diagrams					
Fractions: <ul style="list-style-type: none"> To find equivalent fractions. To compare fractions To convert between improper fractions and mixed numbers To add and subtract fractions. To multiply fractions. To divide fractions To find a fraction of a quantity. 	KS2: Fractions	Y8 Autumn 1.1 – Fractions	<ul style="list-style-type: none"> use the four operations, including formal written methods, applied to integers,... proper and improper fractions, and mixed numbers, all both positive and negative interpret fractions as operators 	<ul style="list-style-type: none"> Numerator Denominator Simplify Equivalent Mixed number Proper/Improper Fraction 	N23a N23b N23c N33 N34 N35 N36 N37a N37b N41 N42a N42b
Year 7		Half Term 3.1			
Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
Decimals & Rounding: <ul style="list-style-type: none"> To add and subtract with decimals. To solve money problems without a calculator. To round numbers to powers of 10, the nearest whole number, and decimal places To round a number to 1 significant figure. To estimate calculations. (by rounding to 1 significant figure) 	KS2: Addition and Subtraction of decimals	Y8 Autumn 1.1 – Numeracy Y8 Autumn 1.1 - Rounding	<ul style="list-style-type: none"> round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] use approximation through rounding to estimate answers use the four operations, including formal written methods, applied to integers and decimals 	<ul style="list-style-type: none"> Round Decimal place Significant figure Estimate 	N1b N2b N13b N14b N27a N27b N38 N43a N43b
Pitstop: Fractions, Decimals & Rounding					
Percentages (non calc): <ul style="list-style-type: none"> To convert between fractions, decimals and percentages To order mixed fractions, decimals and percentages 	KS2: Percentages (Conversions, Percentage of amount,	Y8 Spring 2.1 – Percentages (Calculator)	<ul style="list-style-type: none"> work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $2\frac{7}{10}$ or 0.375 and $8\frac{3}{8}$) define percentage as 'number of parts per hundred', interpret percentages and 	<ul style="list-style-type: none"> Fraction Decimal Percentage Increase Decrease 	N24a N24b N32 N39a



<ul style="list-style-type: none"> - To find the percentage of an amount without a calculator. - To increase or decrease an amount by a percentage. - To calculate percentage change. - To find the original amount after a percentage change (reverse percentages) - To solve problems involving percentages. 	Increase/Decrease)		<p>percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%</p> <ul style="list-style-type: none"> • interpret percentages as operators • solve problems involving percentage change, including: percentage increase, decrease and original value problems 	<ul style="list-style-type: none"> - Profit - Loss 	N39b R9a R12
Pitstop: Percentages					
<p>Probability</p> <ul style="list-style-type: none"> - To use the probability scale and list outcomes. - To calculate probabilities. - To calculate probabilities using rules of mutually exclusive events. - To understand experimental probability - To work out the expected number of outcomes. - To calculate probabilities from two-way tables. 	Y7: Fractions Y7: Decimals Y7: Percentages	Y8 Spring 2.1 – Probability	<ul style="list-style-type: none"> • record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale • understand that the probabilities of all possible outcomes sum to 1 • generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities. 	<ul style="list-style-type: none"> - Probability - Likely - Unlikely - Certain - Impossible - Mutually exclusive - Experimental Probability - Expected Frequency 	P1 P2a P2b P3 P4 P5 P7
Year 7		Half Term 3.2			
Topics/ Skills	Prior Learning:	Next Steps:	National Curriculum links:	Key Words/ Vocabulary:	Mathswatch videos:
<p>Averages:</p> <ul style="list-style-type: none"> - To calculate mode, median and range from a list of data. - To calculate mean from a list of data - To solve problems involving averages. 	KS2: Calculating the mean	Y8 Summer 3.1 – Averages	<ul style="list-style-type: none"> • describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) 	<ul style="list-style-type: none"> - Average - Mean - Median - Mode - Range 	S6 S7



Pitstop: Probability & Averages

Summer Assessment

<p>Measures:</p> <ul style="list-style-type: none"> - To convert between metric units. - To convert between units of time - To draw and interpret conversion graphs. - To calculate Speed. - To use the speed, distance, time formula to calculate distance and time. 	<p>KS2: Comparing and converting Units</p>	<p>Y8 Summer 3.2 – Measures</p>	<ul style="list-style-type: none"> • use standard units of mass, length, time, money and other measures, including with decimal quantities • use compound units such as speed... to solve problems. • describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts 	<ul style="list-style-type: none"> - Units - Compound Units - mm/cm/m/km - g/kg - Conversion - Speed - Distance - Time 	<p>N7a N7b N7c R2 R1 1a</p>
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Pitstop: Measures