Mathematics (Year 9 COVID-19 Catch Up) Overview

Autumn term

Unit Title	Sequences	Algebraic Notation	Equality and Equivalence	Operations and equations with directed numbers	Constructing and Measuring
Term	Autumn (1)	Autumn (1)	Autumn (1)	Autumn (2)	Autumn (2)
No. Weeks	2 weeks	2 weeks	2 weeks	3 week	3
Overview Year 9 catch up	• Describe and continue a sequence given diagrammatically • Predict and check the next terms of a sequence • Represent sequences in tabular and graphical forms • Recognise the difference between linear and non-linear sequences • Continue numerical non-linear sequences • Explain the term-to-term rule of numerical sequences in words	• Given a numerical input, find the output of a single function machine • Use inverse operations to fdind the input given the output • Use diagrams and letters to generalise number operations • Find the function machine given a simple expression • Substitute values into single operation expressions • Find numberical inputs and outputs for a series of two function machines • Use diagrams and letters with a series of two function machines • Find the function machines given a two-step expression • Substitute values into two-step expressions • Generate sequences given an algebraic rule • Represent one and two step functions graphically	• Understand the meaning of equality • Understand and use fact families, numericallyand algebraically • Solve one-step linr equations involving +/- using inverse operations • Solve one-step linear equations involving X/÷ using inverse operations • Understand the meaning of like and unlike terms • Understand the meaning of equivalence • Simplify algebraic expressions by collecting like terms, using the ≡ symbol	• Understand and use representations of directed numbers • Order directed numbers using lines and appropriate symbols • Perform calculations that cross zero • Add directed numbers • Multiplication of directed numbers • Multiplication and division of directed numbers • Use a calculator for directed number calculations • Evaluate algebraic expressions with directed number • Introduction to two-step equations • Use order of operations with directed numbers • **Roots of positive numbers** • **Explore higher powers and roots**	• Understand and use letter and labelling conventions including those for geometric figures • Draw and measure line segments including geometric figures • Understand angles as a measure of turn • Classify angles • Measure angles up to 180 • Draw angles up to 180 • Draw and measure angles between 180 and 360 • Identify perpendicular and parallel lines • Recognise types of triangle • Recognise typres of quadrilateral • Identify polygons up to a decagon • Construct triangles using SSS • Construct triangles using SSS, SAS and ASA

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Spring term

Unit Title	Geometric Reasoning	Number sense	Sets and probability	Prime Numbers	Cartesian-Plane
Term	Spring (1)	Spring (1)	Spring (2)	Spring (2)	Autumn (b)
No. Weeks	3	2	2	2	3
Overview Year 9 catch up	• Understand and use sum of angles at a point • Understand and use the sum of angles on a straight line • Understand and use the equality of vertically opposite angles • Know and apply the sum of angles in a triangle • Know and apply the sum of angles in a quadrilateral • Solve angle problems using properties of triangles and quadrilaterals • Solve complex angle problems • Find and use the angle sum of a polygon • Investigate angles in parallel lines • Understand and use parallel line angle rules • Use known facts to obtain simple proofs	• Know and use mental addition and subtraction strategies for integers • Know and use mental multiplication and division strategies for integers • Know and use mental arithmetic strategies for decimals • Know and use mental arithmetic strategies for fractions • Use factors to simplify calculations • Use estimation as a method for checking mental calculations • Use known number facts to derive other facts • Use know algebraic facts to derive other facts • Know when to use a mental strategy, formal written method or a calculator	• Identify and represent sets • Interpret and create a venn diagram • Understand and use the intersection of sets • Understand and use the union of sets • Understand and use the complement of a set • Know and use the vocabulary of probability • Generate sample spaces for single events • Calculate the probability of a single event • Understand and use the probability scale • Know that the sum of probabilities of all possible outcomes is 1	• Find and use multiples • Identify factors of numbers and expressions • Recognise and identify prime numbers • Recognise square and triangular numbers • Find common factors of a set numbers inc the HCF • Find common multples of a set of numbers inc the LCM • Write a number as a product of its prime numbers • Use a venn diagram to calculate the HCF and LCM • Make and test conjecture • Use counter examples to disprove a conjecture •	• Work with coordinates in all four quadrants • Identify and draw lines that are parallel to the axis • Recognise and use the line y=x • Recognise and use the lines of the form y=kx • Link y=kx to direct proportion problems • Explore the gradient of the line y=kx • Recognise and use lines of the form y=x+a • Explore graphs with negative gradient (y=-kx, y=a-x, x+y=a) • Link graphs to linear sequences • Plot graphs of the form y=mx+c • Explore non linear graphs • Find the midpoint of a line segment

Mathematics (Year 9 COVID-19 Catch Up) Overview

Summer term

Unit Title	Brackets, equations and inequalities	sequences	indices	Fractions and percentages	Area of trapezia and circles
Term	Spring (a)	Spring (a)	Spring (a)	Spring (a)	Summer (a)
No. Weeks	4	1	1	3	2
Overview Year 9 catch up	- Form algebraic expressions - Use directed number with algebra - Multiply out a single bracket - Factorise into a single bracket - Expand multiple single brackets and simplify - Expand a pair of binomials - Solve equations, including with brackets - Form and solve equations with brackets - Understand and solve simple inequalities - Form and solve inequalities - Solve equations and inequalities with unknown on both sides - Form and solve equations and inequalities with unknown on both sides - Identify and use formulae, expressions, identities and equations	- Generate sequences given a rule in words - Generate sequences given a simple algebraic form - Generate sequences given a complex algebraic rule - Find the rule for the nth term of a linear sequence	- Adding and subtracting expressions with indices - Simplifying algebraic expression by multiplying indices - Simplifying algebraic expression by dividng indices - Using the addition law for indices - Using the addition and subtraction law for indices - Exploring powers of powers	- Convert fluently between key fractions, decimals and percentages - Calculate key fractions, decimlas and percentages of an amount without a calculator - Calculate fractions, decimals and percentages of an amount using calculator methods - Convert between decimals and percentages greater than 100% - Percentage decrease with a multiplier - Calculate percentage increase and decrease using multiplier - Express one number asa fraction or a percentage of another without a calculator - Express one number asa fraction or a percentage of another with a calculator - Work with percentage change - Choose appropriate methods to solve percentage problems - Find the original amount given the percentage less than 100% - Find the original amount given the percentage greater than 100% - Choose appropriate methods to solve complex percentage problems	- Calculate the area of triangles, rectangles and parallelograms - Calculate the area of a trapezium - Calculate the perimeter and area of compound shapes - Investigate the area of a circle - Calculate the area of a circle and parts of a circle without a calculator - Calculate the area of a circle and parts of a circle with a calculator - Calculate the perimeter and area of compound shapes (2)