Queen Elizabeth High School

Scheme of Work	SUBJECT: Mathematics			YEAR: 11 Foundation (1-year revision) ~ Autumn term 1	
	Fractions, decimals and percentages	**Ratio: Estimating with rounding**	**Conversions and exchange rates. Negative numbers**	**Nth term & prime factorisation**	**Angle rules, triangles, interior and exterior angles**
Key concepts	• To become familiar with the connections between fractions, decimals and percentages. • To be able to manipulate each form of number fluently using equivalencies and recognising they are all the same quantity of an amount.	• To become familiar with equivalent ratios; dividing ratios into given amounts; work with ratios in the context of comparisons, concentrations, scaling and recipes. • To work with rounding to given decimal places and significant figures. • To use approximation as a way of estimating outcomes and estimation as a means of checking results.	• To become familiar with calculating with negative numbers. • To work with conversions with money and exchange rates. • To work with numbers in Standard Form	• To become familiar with prime numbers and prime number decomposition. • To work with sequences and find the nth term of a series.	• To undertake a diagnostic assessment of geometry skills and identify first targets. • To clarify angles and triangle rules. • To determine procedures for calculating interior and exterior angle calculations.

	• To work with fractions, decimals and percentages as individual skill areas.				
Themes	**Fractions, decimals and percentages**	**Estimating and rounding**	**Negative numbers, standard form and exchange rates**	**Sequences and prime factors**	**Angle properties**
Challenge	Converting between mixed numbers and improper fractions Adding and subtracting fractions Multiplying and dividing fractions Perform the four operations with decimals Calculate percentage increase and decrease	Dividing a quantity into a given ratio Compare two different quantities using ratio, i.e., where they need to convert into the same unit first Scaling recipes up or down Rounding to decimal places Rounding to significant figures	Preform the four operations with negative numbers Solve problems involving exchange rates Convert numbers between standard form to ordinary form and vice versa. Complete calculations involving standard form Inputting and interpreting standard for on a calculator.	Identify the HCF (highest common factor of two or more numbers) Recall prime numbers up to 100 Identify prime factors of a number Complete factor trees Use factor trees to write a number as a product of its primes Identify the nth term of a linear sequence	Solve more complex problems using more than one angle property to solve. Angles in parallel lines Angles in polygons, interior and exterior angles

		Estimate/approximate answers by rounding to 1 significant figure		Identify the 10^{th}/50^{th}/100^{th} term of a sequence Identify if a number is in a sequence	
Support	Equivalencies between a range of FDP Calculating fraction of a quantity Calculate percentage of a quantity, both non-calculator and calculator	Understand ratio notation and can describe everyday situations as ratio Simplify ratio Round numbers to the nearest 10, 100, 1000 and nearest whole number	Order negative and positive numbers Construct and interpret real life graphs such as conversion graphs.	Recap identifying factors of a given value Recall prime numbers up to 20 Identify the next two terms of a sequence. Identify the term-to-term rule for a linear sequence	Recap measuring and drawing angles Recall the basic rules for angle properties, angles on a straight line, angles around a point, vertically opposite angles, angles in a triangle/quadrilateral
Literacy focus	Key words ~ Fraction, decimal, percentage, equivalent, improper fractions, mixed numbers	Key words ~ Ratio, Scale, estimate, approximate, decimal places, significant figures, round	Key words ~ negative numbers, conversion graphs, exchange rates, standard form	Key words ~ sequences, term, nth term, term-to-term rule, prime, factor tree, product	Key words ~ angles, acute, obtuse, reflex, angle properties, vertically opposite, corresponding, alternate, co-interior, parallel lines, polygons, interior, exterior

Cross-curricular links					
SMSC & MBV					
ASSESSMENTS	Assessment 1 ~ October	Assessment 1 ~ October	Assessment 1 ~ October	Assessment 1 ~ October	Assessment 1 ~ October
Out of school learning	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week

Queen Elizabeth High School

Scheme of Work	SUBJECT: Mathematics			YEAR: 11 Foundation (1-year revision) ~ Autumn term 2		
	Polygons, 2D & 3D shapes, symmetry & circles	**Pythagoras' theorem and trigonometry**	**Area and volume**	**Introduction to algebra**	**Perimeter, scales and averages**	**Mode, charts and graphs**
Key concepts	• To become familiar with a range of polygons and recognise the difference between 2D and 3D shape. • To revise elements of symmetry – rotation, reflection, translation and enlargement. • To name the common parts of a circle and	• To become familiar with Pythagoras' Theorem being able to find missing lengths in right angled triangles; being able to prove a triangle contains a right angle. • To use trigonometry to find lengths and angles in	• To become familiar with area calculations in simple and compound shapes and with various different polygons; and to identify the link with surface area. • To determine a range of volume calculations.	• To become familiar with algebraic notation and writing algebraic expressions. • To expand and simplify expressions, collecting like parts. • To solve algebraic equations. • To understand the index laws.	• To be able to calculate the perimeter of simple and compound shapes, including those with part circles. • To be able to work with map scale and use scale drawings to solve problems.	• To become familiar with modal average. • To work effectively with a range of charts and graphs

	work with area and circumference calculations, including arc length and understanding `pi`	right angled triangles.	• To experience constructions using compass and protractor.		• To be able to differentiate between mean, median and mode.	
Themes	**2D and 3D shapes**	**Pythagoras and trigonometry**	**Area and volume**	**Introduction to algebra**	**Perimeter, scales and averages**	**Mode, charts and graphs**
Challenge	Name a range of polygons Describe 3D shapes using vertices, edges and faces Recap the four transformations, including when drawn on a pair of axes Identify what transformation has	Use Pythagoras' theorem to calculate a mixture of shorter and longer sides. Using Pythagoras' theorem to prove if a triangle is right angled or not. Apply Pythagoras to more complex problem-solving questions	Calculating area of compound shapes Volume of compound shapes Volume of prisms Construct triangles from any of the following information SAS, ASA or SSS	Write expressions to represent situations, such as perimeter Simple by collecting like terms, involving powers Expand over a single bracket Solve a variety of linear equations including those with brackets and	Calculate the perimeter of more complex shapes Calculate the perimeter of compound shape involving parts of circles Know and understand how to interpret scales such as 1:100 000	Understand that modal class and mode are the same thing Identify the modal class from a grouped and ungrouped frequency table Identify the mode from a diagram Identify the range from a grouped & ungrouped frequency table

	taken place and describe accordingly Calculate the area and circumference of a circle Calculate area of a segment Calculate the length of an arc Leave answers in terms of pi	Apply Pythagoras to multi-step problems Calculating missing sides and angles in basic triangles Know the exact trig values for sin/cos/tan 30, 45, 60, 90 & 0		unknown on both sides Index laws for simplifying expressions	Solve problems using scale drawings Apply scales to problems using other areas of mathematics such as speed, time and distance Calculate the mode, median and mean of discrete data	
Support	To be able to identify 2D and 3D shapes Identify line and rotational symmetries To translate a shape Identify key parts of a circle, radius, diameter and circumference	Recap knowledge of triangles eg areas, angles. Use Pythagoras' theorem to calculate the longest side of a right-angled triangle	Recap formulas for calculating area of 2D shapes Calculate volume of cubes and cuboids Recap measuring angles	Recap algebraic notation Simplify by collecting like terms ~ basic Solving one step equations	Understanding the meaning of the term perimeter. Calculate perimeter of simple shapes Read and interpret simple maps and scale	Identify the modal class from a frequency table Identify the mode from a diagram Identify the range from an ungrouped frequency table

		Know the three ratios for trigonometry. Can identify which ratio to use when		Basic rules of indices, multiplying and dividing terms	Know the difference between mode, median and mean	
Literacy focus	Key words ~ 2D & 3D shapes, polygons, reflection, rotation, translation, enlargement, circle, radius, diameter, circumference, Pi	Key words ~ Triangle, Pythagoras, hypotenuse, adjacent, opposite, square, square root, inverse, right-angle	Key words ~ Square, rectangle, triangle, parallelogram, trapezium, compound shapes, volume, cube, cuboid, prism	Key words ~ Expressions, equations, simplifying, indices	Key words ~ Average, mode, median, mean, frequency, scales, maps, ratio, perimeter, compound, complex shapes, circles, circumference	Key words ~ Average, mode, modal, range, frequency table, diagrams
Cross-curricular links						
SMSC & MBV						
ASSESSMENTS	Assessment 2 ~ Mocks	Assessment 2 ~ Mocks	Assessment 2 ~ Mocks	Assessment 2 ~ Mocks	Assessment 2 ~ Mocks	Assessment 2 ~ Mocks
Out of school learning	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week

Queen Elizabeth High School

Scheme of Work	SUBJECT: Mathematics			YEAR: 11 Foundation (1-year revision) ~ Spring term 1	
	Trigonometry	**Bearings, area and circumference of a circle**	**Inequalities, indices, similar and congruent shapes**	**Rotation, Reflection, enlargement and translation**	**Surface area and area of compound shapes**
Key concepts	• To become familiar with Pythagoras' Theorem and Trigonometry. • To revisit & develop fluency with fractions, decimals and percentages equivalencies skills.	• To become familiar with bearings. • To calculate area and circumference of a circle and semi-circles. • To understand `pi` and keep answers in terms of `pi`.	• To become familiar with inequalities on a number line. • To identify congruent shapes and triangles using rules. • To identify similar shapes and triangles.	• To carry out reflections, rotations, enlargements and translations. • To identify and describe transformations. • To identify and work with vector notation.	• To become familiar with calculating surface area of a range of 3D shapes. • To apply a range of area calculations. • To consider strategies for dealing with more problem-solving questions.
Themes	**Trigonometry**	**Bearings, area and circumference of a circle**	**Inequalities, indices, similar and congruent shapes**	**Rotation, Reflection, enlargement and translation**	**Surface area and area of compound shapes**

Challenge	Recap methods for calculating missing sides using Pythagoras' theorem Apply Pythagoras theorem to more complex problems Recapping methods for calculating missing sides using trigonometry Recapping methods for calculating missing angles using trigonometry Solve problems involving converting between fractions, decimals and percentages	Know the three rules for measuring and drawing angle Use bearings to pin point location Recap using scales Know formulas for area and circumference of a circle Calculate area and perimeter of semi circles Calculate area of sector Calculate arc length Ensure students are confident in leaving answers in terms of 'pi'	List integers in an inequality Represent inequalities on a number line Describe inequalities from a number line by writing the integers or writing algebraically Solving inequalities algebraically Identify congruent triangles and give reasons from SSS, ASA, SAS or RHS Know that similar shapes are just enlargements Identify similar shapes from a list of shapes By identifying the scale factor, calculate the length of a missing side	Reflect a shape through the axes on a coordinate grid Reflect a shape through a diagonal mirror line Reflect a shape through the lines y = a, x = b and y = x Rotate a shape using a centre of rotation Rotate a shape on a coordinate grid Translate a shape using column vectors Enlarge a shape using a fractional scale factor Enlarge a shape using a centre of enlargement. Enlarge a shape on a coordinate grid.	Understand the term 'Surface area' Calculate surface area of cubes and cuboids Calculate surface area of prisms Solve problem solving questions involving area and volume

				Describe a transformation which has already taken place	
Support	Recap methods for calculating missing sides using Pythagoras' theorem Recapping methods for calculating missing sides using trigonometry Recapping methods for calculating missing angles using trigonometry Recap FDP equivalents	Know that a bearing is an angle used to measure a rotation/turn Measure/draw bearings Calculate area and circumference of a circle	Understand the meaning of the inequality symbols Understand the term congruent. Identify congruent shapes from a list of shapes Know that similar shapes are just enlargements Identify scale factor of two similar shapes	Reflect a shape through a mirror line Rotate a shape through ½ , ¼ or ¾ turn Enlarge a simple shape by a whole number scale factor Translate a shape when instructions are given in words	Recap formulas for calculating area of 2D shapes Calculate the area of a variety of 2D shapes Calculate the area of compound shapes Understand the term 'Surface area'
Literacy focus	Key words: Pythagoras, trigonometry, triangle, ratio, sine, cosine, tangent, opposite, adjacent, hypotenuse, fraction, decimal, percentage, equivalent	Key words: Bearings, clockwise, anticlockwise, degrees, north, circle, semi-circle, arc, sector, area, circumference, perimeter	Key words: Inequality, greater than, less than, equal to, not equal to, congruent, similar, scale factor	Key words: Reflection, rotation, translation, enlargement, transformation, centre of rotation, centre of enlargement, vector	Key words: Area, rectangle, square, triangle, parallelogram, trapezium, surface area, compound shape, prism

Cross-curricular links					
SMSC & MBV					
ASSESSMENTS	Assessment 3 ~ In class formal assessment	Assessment 3 ~ In class formal assessment	Assessment 3 ~ In class formal assessment	Assessment 3 ~ In class formal assessment	Assessment 3 ~ In class formal assessment
Out of school learning	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week

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Scheme of Work	SUBJECT: Mathematics			YEAR: 11 Foundation (1-year revision) ~ Spring term 2	
	Standard form, Loci and construction	**Distance time graphs, Scatter graphs & straight-line graphs**	**Volume of a prism & Venn diagrams**	**Probability, relative frequency & proportion**	**Systematic listing, and more probability**
Key concepts	• To be able to convert numbers into and from standard form and calculate effectively with various standard form numbers. • To use construction skills to create accurate geometric drawings. • To identify and construct loci.	• To use and convert between compound measures. • To plot and interpret scatter diagrams, describe correlation, identify outliers and describe causation and predict results. • To identify the main features of straight-line graphs, find gradients and identify equations.	• To become familiar with volume of a prism calculations – can be extended to cover cuboids and cylinders. • To use various Venn diagram representations to solve probability questions. • To identify main features of problem solving and	• Basic probability • Calculate relative frequency • To work with tree diagrams and probability. • To identify other key topics of weakness including direct & inverse proportion.	• To carry out effective systematic listing strategies. • Calculating combined probabilities

			functional questions.		
Themes	**Standard form, Loci and construction**	**Distance time graphs & Scatter graphs**	**Volume of a prism & Venn diagrams**	**Probability, relative frequency & proportion**	**Systematic listing**
Challenge	Convert large and small numbers from ordinary to standard form and vice versa Complete simple calculations given in standard form Know how to entre standard form into a calculator Problem solve questions involving standard form ~ Calculator allowed	Know and use the triangle for calculating speed, distance and time Solve problems involving speed, distance and time Converting between units for compound measures Construct a scatter diagram and describe the relationship between the variables. Identify types of correlation	Volume of cube/cuboid Volume of prism Problem solving involving volume of 3D shapes Organise data using a Venn diagram Calculate simple probability from a Venn diagrams	Calculating probability from equally likely outcomes Know that exhaustive events add to one and use this fact to solve probability-based problems Calculate the probability of something not happening Understand and apply relative frequency to estimate probability Complete frequency trees to represent data	Listing outcomes of combined events in a sample space diagram Use the ‘and’ and ‘Or’ rule to calculate probability from tree diagrams and sample space diagrams Calculate expected frequencies

		Draw lines of best fit and use them to estimate values Construct straight line graphs Calculate the gradient from a graph Identify the equation of a line given on a coordinate grid. Identify the equation of a line from the gradient and a point or from two points.		Construct tree diagrams to organise information Calculate probability from tree diagrams (without replacement only)	
Support	Convert large and small numbers from ordinary to standard form and vice versa	Know and use the triangle for calculating speed, distance and time Construct a scatter diagram Construct straight line graphs by completing a table of values first.	Volume of cube and cuboid Organise data using a Venn diagram	Represents outcomes on a probability scale	List outcomes from single events

Literacy focus	Key words: Standard form, ordinary form,	Key words: Compound measures, speed, distance, time, scatter diagram, line of best fit, correlation, negative, positive, straight-line, coordinates, gradient, y-intercept	Key words: Volume, cube, cuboid, prism, Venn diagram, organise, probability	Key words: Outcomes, combined events, probability, equally likely outcomes, frequency trees, tree diagrams, probability scales, exhaustive events	Key words: Outcomes, combined events, probability, equally likely outcomes, frequency trees, tree diagrams, probability scales, exhaustive events
Cross-curricular links					
SMSC & MBV					
ASSESSMENTS	Assessment 4 ~ Mocks #2 or formal in class assessment	Assessment 4 ~ Mocks #2 or formal in class assessment	Assessment 4 ~ Mocks #2 or formal in class assessment	Assessment 4 ~ Mocks #2 or formal in class assessment	Assessment 4 ~ Mocks #2 or formal in class assessment
Out of school learning	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week	Exam questions ~ ½ Churchill exam paper ~ to be marked in class next week

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Scheme of Work	SUBJECT: Mathematics		YEAR: 11 Foundation (1-year revision) ~ Summer term 1	
	Percentages, simple and compound interest	**Frequency tables, averages and further algebra**	**Expanding and factorising expressions**	**Revision**
Key concepts	• To distinguish between simple and compound interest and work effectively with both types of calculation. • To identify gaps in knowledge with fractions, decimals and percentages. • To identify gaps in knowledge with ratio and proportion.	• To carry out full analysis of averages using a range of methods. • To create and solve equations and rearrange formulae. • To expand and simplify algebraic expressions with single brackets.	• To use algebra to factorise and expand algebraic expressions with increased complexity. • To solve problems using simultaneous equations.	
Themes	**Percentages, simple and compound interest**	**Frequency tables, averages and further algebra**	**Expanding and factorising expressions**	**Revision**

Challenge	Recap different forms of percentages: One number as a percentage of another Calculate percentage of a quantity Percentage increase/decrease Reverse percentages Simple and compound interest Problem solve involving FDP Recap different forms of ratio: Simplifying ratios Dividing a quantity into a ratio Direct and inverse proportion Problem solve involving ratio and proportion	Calculating mean from frequency table Identifying the median interval on a frequency table Identifying modal interval from a frequency table Solve linear equations Set up linear equations to solve problems, e.g. involving angles in geometric shapes or area and perimeter Expand and simplify single brackets Rearranging simple formulae	Expand double brackets Factorise simple expressions into a single bracket Solving simultaneous equations, both graphically and algebraically Factorise simple quadratics Solve quadratic equations by factorising	

Support	Calculate percentage of a quantity Recap knowledge of fractions/decimals/percentages	Recap calculating mean, median, mode and range from a set of raw data Recap simple algebraic simplifying skills	Expand and simplify single brackets Solve 1 and 2 step equations	
Literacy focus	Key words: Fraction, decimal, percentage, quantity, increase, decrease, reverse percentages, ratio, proportion	Key words: Mean, median, mode, modal, range, frequency table, interval, equation, expand and simplify	Key words: Expand and simplify, equations, quadratic equations factorise	
Cross-curricular links				
SMSC & MBV				
ASSESSMENTS	Assessment ~ Actual exam	Assessment ~ Actual exam	Assessment ~ Actual exam	Assessment ~ Actual exam
Out of school learning	Revision for exam	Revision for exam	Revision for exam	Revision for exam