ST. CHRISTOPHER'S C.E. HIGH SCHOOL
A Church of England Academy

Programme of Learning – Overview

Key Stage 3			
Year title:	**Y7 Scheme of Work**	**Year group:**	**7**

Autumn Term 1:

Intent and composite knowledge (overview):

Unit 1 – Using Number

- read and use calendars
- read and use 12-hour and 24-hour clocks
- convert between 12-hour and 24-hour systems
- work out everyday money problems
- carry out calculations from information given in tables and charts
- use a number line to order positive and negative whole numbers
- solve problems involving negative temperatures
- to use and apply comparison symbols such as > (greater than) and < (less than)
- carry out additions and subtractions involving negative numbers
- use a number line to calculate with negative numbers
- carry out multiplications and divisions involving negative numbers

Unit 2 - Algebra

- use algebra to write simple expressions
- substitute numbers into expressions to work out their value
- apply arithmetic rules (+-) to algebraic expressions
- use substitution in the context of formulae
- construct formulae from contextual situations
- recognise equivalent expressions
- apply arithmetic rules (x ÷) to algebraic expressions
- simplify expressions involving brackets

Unit 3 - Sequences

- use function machines to generate inputs and outputs
- recognise, describe and generate linear sequences
- identify missing terms in a sequence
- use given inputs and outputs to work out a function
- explore square and triangular numbers as sequences
- know and generate the Fibonacci sequence and Pascal's triangle
- identify the nth term of a linear sequence
- use the nth term to work out any term in a sequence

Summative assessment:

3 x Unit Assessments

Spring Term 1:

Intent and composite knowledge:

Unit 7 – Working with Numbers

- recognise and use **square numbers** up to 225 (15_2)
- recognise and use **square roots** up to √225
- round numbers to the nearest whole number 10, 100 or 1000
- use the conventions of BIDMAS to carry out calculations
- round numbers to more than one decimal place
- round numbers to one or two significant figures LARGE AND SMALL.
- use rounding to estimate answers to calculations, to spot possible errors

Unit 8 - Equations

- find missing numbers in simple calculations
- understand what an equation is
- solve equations involving one operation
- solve equations involving two operations
- use algebra to set up and solve equations
- solve equations involving brackets
- solve equations that include fractions and decimals

Unit 9 - Percentages

- understand what a percentage is
- understand the equivalence between some simple fractions and percentages
- find a fraction of a quantity
- find a percentage of a quantity
- write a percentage as a decimal
- use a calculator to find a percentage of a quantity using multipliers
- understand and use percentages greater than 100%
- work out the result of a percentage change

Summative assessment:

3 x Unit Assessments

Summer Term 1:

Intent and composite knowledge (overview):

Unit 13 - Probability

- know the vocabulary of probability
- know and use the 0 – 1 probability scale
- work out probabilities based on equally likely outcomes
- learn about and understand experimental probability
- calculate probability from experimental data.
- understand the difference between theoretical and experimental probability
- use sample space diagrams and lists to work out the probability of a combined event
- compare and use experimental and theoretical probability

Unit 14 - Statistics

- calculate and use the mode, median and range of a set of data
- calculate and use the mean average of a set of data
- be able to read and interpret different statistical diagrams
- create and use a tally chart
- understand how to collect, use and compare data
- understand continuous data and use grouped frequency

Unit 15 – Interpreting Data

- read data from pie charts, where the data is given in simple sectors
- use a scaling method to draw a pie chart
- use charts and diagrams to interpret data.
- use the averages and range to compare and interpret data sets
- construct and interpret pie charts

Summative assessment:

3 x Unit Assessments

Autumn Term 2:	Spring Term 2:	Summer Term 2:
Intent and composite knowledge (overview):	**Intent and composite knowledge :**	**Intent and composite knowledge (overview):**
Unit 4 – Co-ordinates & Graphs	**Unit 10 – Perimeter, Area & Volume**	**Unit 16 – 3D Shapes**
• understand and use coordinates to locate position points in all four quadrants • draw a graph for a simple rule • draw a graph for a simple relationship • recognise and draw line graphs with fixed values of x and y e.g. x = 4 and y = 6 • learn how graphs can be used to represent real-life situations • draw and use real-life graphs • recognise and draw the graphs of y = x and y = –x • recognise and draw lines of the form *y = ax* • recognise and draw graphs of the form *x + y = a*	• measure and draw lines accurately • work out or estimate the perimeter and area of 2D shapes by counting squares • work out the perimeter and area of 2D shapes by using the appropriate formula • work out the perimeter and area of compound rectilinear shapes by using simple formulae • calculate the volume of cubes and cuboids • calculate the surface area of cubes and cuboids • calculate the area of a triangle. • calculate the area of a parallelogram • calculate the area of a trapezium	• know how to count the faces, edges and vertices on a 2D shape • draw nets for 3D shapes • know the names and properties of common 3D shapes • use isometric paper to represent shapes made from cubes • draw nets for 3D shapes • construct 3D shapes from nets, including more complex shapes • establish the rule connecting faces, edges and vertices in 3D shapes (Euler)
Unit 5 – Integers & Decimals	**Unit 11 – Angles**	**Unit 17 - Symmetry**
• multiply and divide decimal numbers by powers of 10 • choose a written method for multiplying two numbers together • use written methods to carry out multiplications accurately • choose a written method for dividing one number by another • use written methods to carry out divisions accurately • add and subtract decimal numbers • convert between common metric units • use measurements in calculations • recognise and use appropriate metric units • multiply and divide decimal numbers	• use a compass to give directions • know the different types of angles • use a protractor to measure an angle • use a protractor to draw an angle • calculate angles at a point • calculate angles on a straight line • calculate vertically opposite angles • know that the angle sum in a triangle is 180° • know that the angle sum in a quadrilateral is 360° • understand the properties of parallel, intersecting and perpendicular lines • understand and use the properties of a triangle • understand and use the properties of quadrilaterals • calculate angles in parallel lines • calculate missing angles involving algebra	• recognise shapes that have reflective symmetry • draw lines of symmetry on a shape • recognise shapes that have rotational symmetry • find the order of rotational symmetry for a shape • understand how to reflect a shape • use a coordinate grid to reflect shapes • understand how to tessellate shapes • use a coordinate grid to reflect shapes in lines, including y = x
Unit 6 - Fractions	**Unit 12 - Ratio**	
• write fractions in their simplest form • compare and order two fractions • add and subtract fractions with the same denominator • convert between mixed numbers and improper fractions • add and subtract simple mixed numbers with the same denominator • add and subtract fractions with different denominators • add and subtract simple mixed numbers with different denominators	• understand ratio notation • write a ratio as simply as possible • use ratios to find missing quantities • share a ratio in a given quantity • write ratios in the form 1 : x • understand the connection between ratios and fractions • use and apply the connection between ratios and fractions as a proportionality relationship • write ratios to compare more than two items	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**3 x Unit Assessments**	**2 x Unit Assessments**

ST. CHRISTOPHER'S C.E. HIGH SCHOOL
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Programme of Learning – Overview

Key Stage 3			
Year title:	**Y8 Scheme of Work**	**Year group:**	**8**

Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**
Intent and composite knowledge (overview):	**Intent and composite knowledge:**	**Intent and composite knowledge:**
Unit 1 – Working with Numbers • carry out additions and subtractions involving negative numbers • carry out multiplications and divisions involving negative numbers • know and use powers and roots • understand and use HCF and LCM (from lists) • be able to identify the prime factors of any integer • understand and use HCF and LCM (from prime factors) • be able to use and apply number skills in a real-life situation	**Unit 7 – Number** • multiply and divide by positive powers of 10 • round numbers to a given decimal place • multiply and divide by negative powers of 10 • multiply and divide with combinations of large and small numbers mentally • round to a specific number of significant figures • estimate answers to problems • write a large number in standard form • write a small number in standard form • multiply with numbers in standard form	**Unit 12 - Proportion** • understand the meaning of direct proportion • find missing values in problems involving proportion • represent direct proportion graphically and algebraically • know what is meant by inverse proportion • use graphical and algebraic representations of inverse proportion • recognise the difference between direct and inverse proportion in problems • work out missing values
Unit 2 – Fractions • add and subtract fractions • multiply a fraction by an integer • add and subtract mixed numbers • multiply a mixed number by an integer • divide a unit fraction by an integer • divide an integer by a unit fraction • divide a fraction or a mixed number by an integer • divide a mixed number by a unit fraction	**Unit 8 – Equations & Formulae** • solve simple equations • solve equations where the answers are fractions or negative numbers • substitute values into a variety of formulae • solve equations involving brackets • solve equations with the variable on both sides • solve equations with fractions and fractional coefficients • solve simple equations involving squares • change the subject of a formula, including formulae involving squares	**Unit 13 – Interpreting Data** • interpret different charts seen in the media • interpret a pie chart • use a scaling method to draw pie charts • read scatter graphs • understand correlation • construct scatter graphs and use a line of best fit to describe data trends • draw pie charts relative to data size • interpret and criticise a variety of graphs.
Unit 3 – Geometry and Scales • calculate angles in parallel lines • understand how to translate a point or a shape • understand how to rotate a point or a shape • enlarge a 2D shape by a scale factor • construct the perpendicular bisector of a line • construct the angle bisector of a line • recognise congruent shapes • know the conditions for recognising congruent triangles • understand and use scale diagrams • use ratio to compare lengths, areas and volumes of 2D and 3D shapes • enlarge a 2D shape by a fractional scale factor • construct a perpendicular to a line from or at a given point • solve geometric problems using the rules of congruency • use and apply skills and knowledge of area, ratio and data handling in a real-life context.		
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**2 x Unit Assessments**

Autumn Term 2 title:	Spring Term 2 title:	Summer Term 2 title:
Intent and composite knowledge (overview):	**Intent and composite knowledge:**	**Intent and composite knowledge:**
Unit 4 - Algebra • simplify algebraic expressions involving the four operations of arithmetic • simplify expressions by collecting up like terms • multiply out brackets in an expression • identify and manipulate algebraic expressions • write algebraic expressions involving powers • use and apply algebraic manipulation skills in a range of contexts (forming expressions)	**Unit 9 – Circles** • know the definition of a circle and be able to name the parts of a circle • calculate the circumference of a circle • calculate the area of a circle • calculate the perimeter and area of more complex shapes which include circles.	**Unit 14 – Comparing Data** • create a grouped frequency table from raw data • understand and calculate the mean average of data • interpret frequency diagrams • draw a frequency diagram from a grouped frequency table • use the mean and range to compare data from two sources • understand when each different type of average is most useful • recognise when a statistical chart may be misleading
Unit 5 – Sequences • know and understand the Fibonacci sequence • use algebra with function machines • find the nth term of sequences • use the nth term of a sequence • find the nth term of simple quadratic sequences	**Unit 10 – Surface Area & Volume** • use a formula to work out the area of a rectangle • work out the area of a compound shape • use a formula to work out the area of a triangle • work out the area of a parallelogram • work out the area of a trapezium • calculate the surface area of a cuboid • convert between metric units for area and for volume • calculate the surface area of a prism • calculate the volume of a prism	**Unit 15 - Probability** • use a probability scale to represent a chance • collect data and use it to find probabilities • decide if an event is fair or biased • recognise mixed events where you can distinguish different probabilities • use a sample space to calculate probabilities • use relative frequency to estimate probabilities • recognise mutually exclusive outcomes and exhaustive outcomes • use a Venn diagram to calculate probabilities
Unit 6 - Graphs • recognise patterns within coordinates • draw graphs of linear rules • know the gradient of a line from its linear equation • establish the equation of a line in the form y = mx + c from its graph • draw graphs from real-life situations to show the relationship between two variables • recognise and draw the graph from a quadratic equation • solve a quadratic equation from a graph	**Unit 11 - Percentages** • use a multiplier to calculate a percentage of an amount • write one quantity as a percentage of another • use percentages to compare two quantities • use a multiplier to calculate a percentage increase or decrease • work out a change of value as a percentage increase or decrease • calculate an increase of more than 100%	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**3 x Unit Assessments**	**2 x Unit Assessments**

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Programme of Learning – Overview

Key Stage 3			
Year title:	**Y9 Scheme of Work**	**Year group:**	**9**

Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**
Intent and composite knowledge:	**Intent and composite knowledge:**	**Intent and composite knowledge:**
Unit 1 – Percentages	**Unit 5 – Algebra**	**Unit 9 – Right Angled Triangles**
• know what is meant by simple interest • solve problems involving simple interest • use the multiplier method to calculate the result of a percentage increase or decrease • calculate the percentage change in a value • calculate the original value, given a percentage change • calculate the result of repeated percentage changes	• expand brackets with numbers or variables outside of the bracket • factorise expressions (where the common factor is a number or a variable) • expand expressions with two brackets and simplify them • solve equations with one or more sets of brackets • solve equations with fractions • change the subject of a formula • expand brackets and simplify more complex expressions (involving more than one variable) • factorise more complex expressions (with more than one common factor) • expand double brackets • solve equations where the variable is in the denominator of a fraction • multiply out three brackets • factorise quadratic expressions • recognise and use the difference of two squares • solve simultaneous equations algebraically by elimination and substitution	• understand what similar triangles are • use and recall facts about similar triangles • use Pythagoras' theorem to calculate the longest side in a right- angled triangle • use Pythagoras' theorem to calculate missing sides in right- angled triangles • use Pythagoras' theorem to solve problems in context • understand what the trigonometric ratios sine, cosine and tangent are • calculate an unknown length of a right-angled triangle, given one side and another angle • calculate an unknown angle of a right-angled triangle, given 2 sides • use the converse of Pythagoras' theorem to establish whether or not a triangle is a right-angled triangle
Unit 2 – Fractions	**Unit 6 – Decimal Numbers**	**Unit 10 – Using Data**
• add or subtract any two fractions • multiply two fractions • divide two fractions or a fraction and an integer. • add or subtract mixed numbers • multiply two fractions or mixed numbers • divide one fraction or mixed number by another fraction or mixed number • add, subtract, multiply or divide fractions containing a variable	• round numbers to a given number of **decimal places** • round numbers to a given number of **significant figures** • divide with decimals • solve best value problems • multiply decimal numbers by 10^m *(where m can be a positive or negative integer).* • understand and work with standard form, *using both positive and negative powers of ten.* • multiply numbers in standard form • divide numbers in standard form • use limits of accuracy when rounding data	• use and interpret a variety of graphs and diagrams • use and interpret a variety of time-series graphs • interpret a variety of two-way tables • compare two sets of data from statistical diagrams • draw a line of best fit to show a correlation • estimate a mean from grouped data • draw a cumulative frequency diagram • estimate the median and interquartile range and use them to compare distributions
Summative assessment:	**Summative assessment:**	**Summative assessment:**
2 x Unit Assessments	**2 x Unit Assessments**	**2 x Unit Assessments**

Autumn Term 2 title:	Spring Term 2 title:	Summer Term 2 title:
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 3 – Polygons	**Unit 7 – 3D Shapes**	**-Ensure pupils are ready for the start of the GCSE course**
• know the names of polygons • know the difference between an irregular and a regular polygon • work out missing interior angles in irregular polygons • work out the sizes of the interior angles of regular polygons • work out the exterior angles of regular polygons • work out angles in polygons involving variables • establish which regular polygons tessellate	• work out the surface areas of cubes or cuboids • use a simple formula work out the volume of a cube or cuboid • work out the volume of a triangular prism • convert the metric units for area, volume and capacity • calculate the surface area of a prism • calculate the volume of a cylinder • calculate the curved surface area of a cylinder • calculate the total surface area of a closed cylinder • calculate the volumes and surface areas of composite shapes	**-Look back over previous topics and filling in any gaps in understanding**
Unit 4 –Solving Equations Graphically	**Unit 8 – Compound Units**	
• draw any linear graph from its equation • solve a linear equation from a graph • plot a graph from a real life situation • draw graphs from quadratic equations • solve quadratic equations graphically • solve problems that use quadratic graphs • solve a pair of simultaneous equations graphically • draw graphs of cubic equations • solve cubic equations graphically	• solve distance/time/speed problems • read and interpret distance time graphs • solve problems involving density/mass/volume • solve problems involving pressure • apply the unit cost method to solve problems such as best value	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
2 x Unit Assessments	**2 x Unit Assessments**	

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Programme of Learning – Overview

Key Stage 4			
Year title / big question:	**Year 10 Higher Course**	**Year group:**	**10**

Autumn Term 1 title:

Intent and composite knowledge (overview):

Unit 1: Basic Number

Solve problems set in a real-life context.
Multiply a decimal number by another decimal number Divide by a decimal number.
Round to a given number of significant figures. Estimate before calculating. Round a calculation to give a reasonable answer.
Find multiples and factors. Identify prime numbers. Identify square and triangular numbers. Find square roots. Identify cubes and cube roots.
Identify prime factors. Identify the least common multiple of two numbers. Identify the highest common factor of two multiples.
Multiply and divide positive and negative numbers.

Unit 2: Fractions, Decimals & Percentages

Find one quantity as a fraction of another.
Add and subtract fractions with different denominators.
Multiply proper fractions and mixed numbers. Divide by fractions.
Use a calculator to accurately solve problems involving fractions.
Increase and decrease quantities by a percentage.
Work out percentage change Express one quantity as a percentage of another.

Spring Term 1 title:

Intent and composite knowledge :

Unit 8: Angle Facts

To know the sum of the angles on a straight line, around a point, in a triangle and in a quadrilateral.
To solve missing angle problems in triangles.
To work out the sum of the interior angles in a polygon.
To be able to calculate the size of the interior and exterior angles of any regular polygon.
To solve problems involving alternate, corresponding, allied and opposite angles.
To be able to calculate the size of angles in special quadrilaterals using their geometric properties.
To be able to make a scale drawing to a given scale. To be able to convert measurements to calculate actual distances. To be able to read, interpret and draw bearings diagrams. To use the geometrical properties of a diagram to calculate a bearing.

Unit 9: Length, Area & Volume

Calculate the circumference and area of a circle.
Calculate the area of a parallelogram.
Calculate the area of a trapezium.
Calculate the length of an arc. Calculate the area and angle of a sector.
Calculate the volume of a prism.
Calculate the volume and surface area of a cylinder.
Calculate the volume of a pyramid.
Calculate the volume and surface area of a cone.
Calculate the volume and surface area of a sphere.

Summer Term 1 title:

Intent and composite knowledge :

Unit 12: Similarity

Show two triangles are similar. Work out the scale factor between similar triangles.
Solve problems involving the area and volume of similar shapes.

Unit 13: Exploring & Applying Probability

Calculate experimental probabilities and relative frequencies. Estimate probabilities from experiments. Use different methods to estimate probabilities.
Recognise mutually exclusive, complementary and exhaustive events.
Predict the likely number of successful events, given the number of trials and the probability of any one outcome.
Read two-way tables and use them to work out probabilities.
Use Venn diagrams to solve probability questions.

Unit 3: Statistical Diagrams & Averages

Draw and interpret bar charts and pie charts. Draw and interpret line graphs.
Use averages to solve more complex problems. Identify the advantages and disadvantages of each type of average and learn which one to use in different situations. Work out and use the range of a set of data. Calculate the mode, the median and the mean from a frequency table Identify the modal group. Estimate the mean from a grouped frequency table.
Draw, interpret and use scatter diagrams. Draw and use a line of best fit.

Unit 4: Ratio & Proportion

Simplify a ratio. Express a ratio as a fraction. Divide amounts in given ratios. Complete calculations from a given ratio.
Recognise and solve problems using direct proportion.
Find either the cost per unit weight or the weigh per unit cost and use to identify the cheapest product.
Recognise and solve problems involving the compound measures of rates of pay, speed, density and pressure.
Calculate compound interest Solve problems involving repeated percentage change.
Calculate the original amount after a known percentage change.

Summative assessment:

4 x Unit Assessments

WORK EXPERIENCE

Unit 14: Powers & Standard Form

Use powers (also known as indices). Multiply and divide by powers of 10.
Use rules for multiplying and dividing powers.
Change a number into standard form. Calculate using numbers in standard form.

Unit 15: Linear Equations

Solve equations in which the variable (the letter) appears as part of the numerator of a fraction. Solve equations where the variable appears on both sides of the equals sign. Set up equations from given information and then solve them.
Solve simultaneous linear equations in two variables using the elimination method.
Solve simultaneous linear equations in two variables using the substitution method.
Solve simultaneous linear equations by balancing coefficients.

Summative assessment:

2 x Unit Assessments

Summative assessment:

3 x Unit Assessments

Autumn Term 2 title:	Spring Term 2 title:	Summer Term 2 title:
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 5: Variation	**Unit 10: Linear Graphs**	**Unit 15: Linear Equations (continued)**
Solve problems where two variables have a directly proportional relationship. Work out the constant of proportionality. Solve problems where two variables have an inversely proportional relationship. Work out the constant of proportionality.	Draw linear graphs by finding points. Find the gradient of a straight line. Draw a line with a certain gradient. Draw graphs using the gradient-intercept method. Draw graphs using the cover-up method. Find the equation of a line, using its gradient and intercept. Find the equation of a line given two points on the line. Convert from one unit to another unit by using a conversion graph. Use straight-line graphs to find formulae. Solve simultaneous linear equations using graphs. Draw linear graphs parallel or perpendicular to other lines and passing through a specific point.	Solve problems using simultaneous linear equations. Solve a simple linear inequality and represent it on a number line. Show a graphical inequality. Find regions that satisfy more than one graphical inequality. Prove given results using algebraic methods. Compare coefficients in order to satisfy identities.
Unit 6: Transformations, Constructions & Loci		**Unit 16: Number & Sequences**
Demonstrate that two triangles are congruent. Find the order of rotational symmetry for a 2D shape. Recognise shapes with rotational symmetry. Translate, reflect, rotate and enlarge a 2D shape. Combine transformations. Construct the bisectors of lines and angles. Construct angles of 60° and 90°. Draw a locus for a given rule. Solve practical problems using loci. Construct and interpret plans and elevations of 3D shapes. Recognise that vectors have a magnitude and direction and be able to add/subtract vectors and multiply by a scalar		Recognise patterns in number sequences. Generate sequences, given the *n*th term. Find the *n*th term of a linear sequence. Recognise and continue some special number sequences such as square numbers. Find the *n*th term of a sequence form a diagram or practical problem. Generate the terms of a quadratic sequence from the *n*th term. Work out the *n*th term of a quadratic sequence.

Unit 7: Algebraic Manipulation	Unit 11: Right Angled Triangles	
Recognise expressions, equations, formulae and identities. Substitute into, manipulate and simplify algebraic expressions.	Calculate the hypotenuse in a right angle triangle.	
Factorise an algebraic expression.	Calculate the length of a shorter side in a right angled triangle.	
Expand two binomials to obtain a quadratic expression.	Solve practical problems involving Pythagoras' theorem.	
Expand the square of a binomial.	Use Pythagoras' theorem and isosceles triangles.	
Expand more than two binomials.	Use Pythagoras' theorem to solve problems involving three dimensions.	
Factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets.	Use the three trigonometric ratios.	
Factorise a quadratic expression of the form $ax^2 + bx + c$ into two linear brackets.	Use the trigonometric ratios to calculate an angle.	
Change the subject of a formula.	Find lengths of sides and angles in right-angled triangles using the sine and cosine functions.	
	Find sides and angles in right-angled triangles using the tangent function.	
	Decide which trigonometric ratio to use in a right-angled triangle.	
	Solve practical problems using trigonometry. Solve problems using an angle of elevation or an angle of depression.	
	Solve bearing problems using trigonometry.	
	Find the length x in this isosceles triangle. Calculate the area of the triangle.	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**2 x Unit Assessments** **PPE's**

ST. CHRISTOPHER'S C.E. HIGH SCHOOL
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Programme of Learning – Overview

Key Stage 4			
Year title / big question:	**Year 10 Foundation Course**	**Year group:**	**10**

Autumn Term 1 title:

Intent and composite knowledge (overview):

Unit 1: Basic Number

- use a number line to represent negative numbers
- use inequalities with negative numbers compare and order positive and negative numbers.

- use the four rules of arithmetic with integers and decimals.

- work out the answers to problems with more than one mathematical operation.

Unit 2: Measures & Scale Drawings

- convert from one metric unit to another
- convert from one imperial unit to another.

- use approximate conversion factors to change between imperial units and metric units.

- read and draw scale drawings
- use a scale drawing to make estimates.

- draw nets of some 3D shapes
- identify a 3D shape from its net.

- read from and draw on isometric grids
- interpret diagrams to draw plans and elevations.

Spring Term 1 title:

Intent and composite knowledge (overview):

Unit 7: Decimals & Fractions

- multiply and divide with decimals.

- recognise different types of fraction, reciprocal, terminating decimal and recurring decimal
- convert terminating decimals to fractions
- convert fractions to decimals
- find reciprocals of numbers or fractions.

- work out a fraction of a quantity
- find one quantity as a fraction of another.

- add and subtract fractions with different denominators.

- multiply proper fractions
- multiply mixed numbers
- divide by fractions.

- use a calculator to add and subtract fractions
- use a calculator to multiply and divide fractions.

Summer Term 1 title:

Intent and composite knowledge (overview):

Unit 11: Perimeter & Area

- calculate the perimeter and area of a rectangle.

- calculate the perimeter and area of a compound shape made from rectangles.

- calculate the area of a triangle
- use the formula for the area of a triangle.

- calculate the area of a parallelogram
- use the formula for the area of a parallelogram.

- calculate the area of a trapezium
- use the formula for the area of a trapezium.

- recognise terms used for circle work
- calculate the circumference of a circle.

- calculate the area of a circle

- give answers for circle calculations in terms of ð.

Unit 12: Transformations

- work out the order of rotational symmetry for a 2D shape
- recognise shapes with rotational symmetry.

- translate a 2D shape

- reflect a 2D shape in a mirror line.

- rotate a 2D shape about a point

- enlarge a 2D shape by a scale factor

- use more than one transformation.

- represent vectors
- add and subtract vectors.

Unit 3: Charts, Tables & Averages	Unit 8: Linear Graphs	Unit 13: Probability & Events
• use tally charts and frequency tables to collect and represent data • use grouped frequency tables to collect and represent data.	• use flow diagrams to draw graphs • work out the equations of horizontal and vertical lines.	• use the probability scale and the language of probability • calculate the probability of an outcome of an event.
• draw pictograms to represent statistical data • draw bar charts and vertical line charts to represent statistical data.	• draw linear graphs without using flow diagrams.	• calculate the probability of an outcome not happening when you know the probability of that outcome happening.
• draw a line graph to show trends in data.	• work out the gradient of a straight line • draw a line with a certain gradient.	• recognise mutually exclusive and exhaustive outcomes.
• work out the mode, median, mean and range of small sets of data • decide which is the best average to use to represent a data set.	• draw graphs using the gradient-intercept method • draw graphs using the cover-up method.	• calculate experimental probabilities and relative frequencies from experiments • recognise different methods for estimating probabilities.
	• work out the equation of a line, using its gradient and y-intercept • work out the equation of a line given two points on the line.	• predict the likely number of successful outcomes, given the number of trials and the probability of any one outcome.
	• work out the equation of a linear graph that is parallel to another line and passes through a specific point.	• apply systematic listing and counting strategies to identify all outcomes for a variety of problems.
	• convert from one unit to another unit by using a conversion graph • use straight-line graphs to work out formulae.	
	• solve simultaneous linear equations using graphs.	
	WORK EXPERIENCE	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**3 x Unit Assessments**

Autumn Term 2 title:	Spring Term 2 title:	Summer Term 2 title:
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 4: Angle Facts	**Unit 9: Expressions & Formulae**	**Unit 14: Volumes & Surface Area**
• calculate angles on a straight line • calculate angles around a point • use vertically opposite angles. • recognise and calculate the angles in different sorts of triangle. • calculate the sum of the interior angles in a polygon. • calculate the exterior angles and the interior angles of a regular polygon. • calculate angles in parallel lines. • use angle properties in quadrilaterals. • use a bearing to specify a direction.	• write an algebraic expression • recognise expressions, equations, formulae and identities. • substitute into, simplify and use algebraic expressions. • expand brackets such as $2(x - 3)$ expand and simplify brackets. • factorise an algebraic expression. • expand two linear brackets to obtain a quadratic expression. • factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets. • change the subject of a formula.	• use the correct terms when working with 3D shapes. • calculate the surface area and volume of a cuboid. • calculate the volume and surface area of a prism. • calculate the volume and surface area of a cylinder.
Unit 5: Number Properties	**Unit 10: Ratio, Speed & Proportion**	**Unit 15: Linear Equations**
• find multiples of whole numbers. • recognise multiples of numbers. • identify the factors of a number. • identify prime numbers. • identify prime factors • identify the lowest common multiple (LCM) of two numbers • identify the highest common factor (HCF) of two numbers. • identify square numbers • use a calculator to find the square of a number. • recognise the square roots of square numbers up to 225 • use a calculator to find the square roots of any number. • use some of the important keys when working on a calculator.	• simplify a ratio • express a ratio as a fraction • divide amounts into given ratios • complete calculations from a given ratio and partial information. • recognise the relationship between speed, distance and time • calculate average speed from distance and time • calculate distance travelled from the speed and the time taken • calculate the time taken on a journey from the speed and the distance. • recognise and solve problems that involve direct proportion. • find the cost per unit mass • find the mass per unit cost • use the above to find which product is better value.	• solve linear equations such as • $3x - 1 = 11$ where the variable only appears on one side • use inverse operations and inverse flow diagrams • solve equations by balancing • solve equations in which the variable (the letter) appears in the numerator of a fraction • solve equations where you have to first expand brackets. • solve equations where the variable appears on both sides of the equals sign.

Unit 6: Approximations		
• round a whole number. • round decimal numbers to a given accuracy. • identify significant figures • round numbers to a given number of significant figures • use approximation to estimate answers and check calculations • round a calculation at the end of a problem, to give what is considered to be a sensible answer.		
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**2 x Unit Assessments** **PPE's**

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Programme of Learning – Overview

Key Stage 4			
Year title / big question:	**Year 11 Foundation Course**	**Year group:**	**11**

Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 16: Percentages & Compound Measures		**Unit 26: Powers & Standard Form**
• convert percentages to fractions and decimals and vice versa. • calculate a percentage of a quantity • increase and decrease quantities by a percentage. • express one quantity as a percentage of another • work out percentage change. • recognise and solve problems involving the compound measures of rates of pay, density and pressure	**PPE's**	• write a number as a power of another number • use powers (also known as indices) • multiply and divide by powers of 10. • use rules for multiplying and dividing powers • multiply and divide numbers by powers of 10.
Unit 17 : Percentages and Variation		**Unit 27: Non-Linear Graphs**
• calculate simple interest • calculate compound interest • solve problems involving repeated percentage change • calculate the original amount, given the final amount, after a known percentage increase or decrease • solve problems in which two variables have a directly proportional relationship (direct variation) • work out the constant of proportionality • recognise graphs that show direct variation • solve problems in which two variables have an inversely proportional relationship (inverse variation) • work out the constant of proportionality		• interpret distance–time graphs • draw a graph of the depth of liquid as a container is filled. • draw and read values from quadratic graphs. • solve a quadratic equation by factorisation. • identify the significant points of a quadratic function graphically • identify the roots of a quadratic function by solving a quadratic equation • identify the turning point of a quadratic function. • recognise and plot cubic and reciprocal graphs.

Unit 18 Representation & Interpretation	Unit 22: Simultaneous Equations & Linear Inequalities	GCSE Examination Preparation
• obtain a random sample from a population • collect unbiased and reliable data for a sample • draw and interpret pie charts • draw, interpret and use scatter diagrams • draw and use a line of best fit • identify the modal group • calculate an estimate of the mean from a grouped table	• solve simultaneous linear equations in two variables using the elimination method. • solve simultaneous linear equations in two variables using the substitution method. • solve simultaneous linear equations by balancing coefficients. • solve problems using simultaneous linear equations. • solve a simple linear inequality and represent it on a number line.	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**PPE's** **1 x Unit Assessments**	**2 x Unit Assessments**
Autumn Term 2 title:	**Spring Term 2 title:**	**Summer Term 2 title:**
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 19: Constructions & Loci	**Unit 23: Number and Sequences**	
• construct accurate drawings of triangles, using a pair of compasses, a protractor and a straight edge • construct bisectors of lines and angles • construct angles of 60° and 90° • draw a locus for a given rule • solve practical problems using loci	• recognise patterns in number sequences • recognise how number sequences are built up • generate sequences, given the *n*th term. • find the *n*th term of a linear sequence. • recognise and continue some special number sequences • understand how prime, odd and even numbers interact in addition, subtraction and multiplication problems. • find the *n*th term from practical problems involving sequences.	

Unit 20: Curved Shapes & Pyramids	Unit 24: Congruency & Similarity	
• calculate the length of an arc • calculate the area and angle of a sector.	• demonstrate that two triangles are congruent.	
• calculate the volume and surface area of a pyramid	• recognise similarity in any two shapes • show that two shapes are similar • work out the scale factor between similar shapes.	
• calculate the volume and surface area of a cone		
• calculate the volume and surface area of a sphere		
Unit 21: Right Angled Triangles	**Unit 25: Combined Events**	
• Know what Pythagoras' theorem is • calculate the length of the hypotenuse in a right-angled triangle.	• work out the probabilities when two or more events occur at the same time.	
• calculate the length of a shorter side in a right-angled triangle.	• read two-way tables and use them to work out probabilities.	
• solve problems using Pythagoras' theorem.	• use Venn diagrams to solve probability questions.	
• use Pythagoras' theorem in isosceles triangles.	• understand frequency tree diagrams and probability tree diagrams • use probability tree diagrams to work out the probabilities involved in combined events.	
• define, understand and use the three trigonometric ratios		
• use trigonometric ratios to calculate a length in a right-angled triangle.		
• use the trigonometric ratios to calculate an angle.		
• work out and remember trigonometric values for angles of 30°, 45°, 60° and 90°.		
• solve practical problems using trigonometry • solve problems using an angle of elevation or an angle of depression.		
• solve bearing problems using trigonometry.		
• use trigonometry to solve problems involving isosceles triangles.		
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**3 x Unit Assessments**	**2 x Unit Assessments**

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Programme of Learning – Overview

Key Stage 4			
Year title / big question:	**Year 11 Higher Course**	**Year group:**	**11**

Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**
Unit 17: Counting, Accuracy, Powers & Surds		**Unit 25: Algebraic Fractions & Functions**
Recognise rational numbers, reciprocals, terminating decimals and recurring decimals. Convert terminal decimals to fractions. Convert fractions to recurring decimals. Find reciprocals of numbers or fractions.	**PPE's**	Simplify algebraic fractions Solve equations containing algebraic fractions.
How to estimate powers and roots of any given positive number.		Change the subject of a formula where the subject occurs more than once.
Apply the rules of powers to negative and fractional powers. Find and use the relationship between negative powers and roots.		Find the output of a function. Find the inverse function.
Simplify surds. Calculate and manipulate surds, including rationalising a denominator.		Find the composite of two functions.
Find the error interval or limits of accuracy of numbers that have been rounded to different degrees of accuracy.		Find an approximate solution for an equation using the process of iteration.
Combine limits of two or more variables together to solve problems.		
Work out the number of choices, arrangements or outcomes when choosing from lists or sets.		

Unit 18: Quadratic Equations		GCSE Examination Preparation
Draw and read values from quadratic graphs. Solve a quadratic equation by factorisation. Rearrange a quadratic equation so that it can be factorised. Solve a quadratic equation by using the quadratic formula. Recognise why some quadratic equations cannot be solved. Solve a quadratic equation by completing the square. Identify the significant points of a quadratic function graphically. Identify the roots of a quadratic function by solving a quadratic equation. Identify the turning point of a quadratic function by using symmetry or completing the square. Solve a pair of simultaneous equations where one is linear and one is non-linear, using graphs. Solve equations by the method of intersecting graphs. Solve simultaneous equations where one equation is linear and the other is non-linear. Solve quadratic inequalities.		
Unit 19: Sampling & More Complex Diagrams	**Unit 22: Properties of Circles**	
Understand sampling. Collect unbiased reliable data for a sample. Draw and interpret frequency polygons. Draw and interpret cumulative frequency graphs. Draw and interpret box plots. Draw and interpret histograms where the bars are of equal width. Draw and interpret histograms where the bars are of unequal width. Calculate the median, quartiles and interquartile range from a histogram.	Work out the size of angles in circles. Find the size of angles in cyclic quadrilaterals. Use tangents and chords to find the size of angles in circles. Use the alternate segment theorem to find the size of angles in circles.	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**3 x Unit Assessments**

Autumn Term 2 title:	Spring Term 2 title:	Summer Term 2 title:
Intent and composite knowledge (overview):	**Intent and composite knowledge:**	**Intent and composite knowledge (overview):**
Unit 20: Combined Events Work out the probability of different outcomes of combined events. Work out the probability of two outcomes or events occurring at the same time. Use tree diagrams to work out the probability of combined events. Use the connectors 'and' and 'or' to work out the probabilities for combined events. Work out the probability of combined events when the probabilities change after each event.	**Unit 23: Triangles** Use trigonometric ratios and Pythagoras' theorem to solve more complex two-dimensional problems. Use trigonometric ratios and Pythagoras' theorem to solve more complex three-dimensional problems. Find the sine, cosine and tangent of any angle from 0° to 360° Use the sine rule and the cosine rule to find sides and angles in any triangle. Work out the area of a triangle if you know two sides and the included angle.	
Unit 21: Vectors Add and subtract vectors. Use vectors to solve geometric problems.	**Unit 24: Graphs** Interpret distance-time graphs. Draw a graph of the depth of liquid as a container is filled. Read information from a velocity-time graph Work out the distance travelled from a velocity-time graph Work out the acceleration from a velocity-time graph. Use areas of rectangles, triangles and trapeziums to estimate the area under a curve. Interpret the meaning of the area under a curve. Draw a tangent at a point on a curve and use it to work out the gradient at a point on a curve. Interpret the gradient at a point on a curve. Find the equation of a tangent to a circle. Recognise and plot cubic, exponential and reciprocal graphs. Transform a graph.	
Summative assessment:	**Summative assessment:**	**Summative assessment:**
3 x Unit Assessments	**2 x Unit Assessments**	**2 x Unit Assessments**

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Key Stage 5			
Year title / big question:		**Year group:**	**12**
Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**	
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**	
Summative assessment:	**Summative assessment:**	**Summative assessment:**	
Autumn Term 2 title:	**Spring Term 2 title:**	**Summer Term 2 title:**	
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**	
Summative assessment:	**Summative assessment:**	**Summative assessment:**	

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Key Stage 5			
Year title / big question:		**Year group:**	**13**
Autumn Term 1 title:	**Spring Term 1 title:**	**Summer Term 1 title:**	
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**	
Summative assessment:	**Summative assessment:**	**Summative assessment:**	
Autumn Term 2 title:	**Spring Term 2 title:**	**Summer Term 2 title:**	
Intent and composite knowledge (overview):	**Intent and composite knowledge (overview):**	**Intent and composite knowledge (overview):**	
Summative assessment:	**Summative assessment:**	**Summative assessment:**	