



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Spring Term 2	Graphs 1 Drawing straight line graphs Equation of a straight line Distance time graphs	Working in 3D 3D Shapes Volume of a prism Volume of surface area	Handling data 2 Frequency diagrams Averages and Spread Scatter graphs	Lifeskills 3: Getting ready	Calculations 2 Calculating with roots and indices Exact Calculations Standard Form	Key Task Assessment (Grade specific questions – Problem Solving)		
Sum Term 1	Graphs 2 Properties of Quadratic function Real life graphs	Pythagoras and Trigonometry Pythagoras' Theory Trigonometry	Pythagoras and Trigonometry Trigonometry Vectors	Probability of combined events Sets Possibility spaces Tree Diagrams	Key Task Assessment (Grade specific questions – Skills)			
Sum Term 2	Lifeskills 4: The Launch Party	Sequences Sequence rules Finding the Nth term Special sequences	Units and proportion Compound Units Direct Proportion	Units and proportion Inverse proportion Growth and Decay	Revision 4 Overview of topics	Key Task Assessment (Grade specific questions – Problem Solving)	GCSE question paper and review	



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 1	
Overview and Aims: Calculations 1 Students will be able to add, subtract, multiply and divide so students gain the skills to be able to look after their own finances. Students will be using positive and negative integers, decimals and how to apply these core skills to various different scenarios	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ ✓ I can use Place Value when calculating with decimals ✓ I can order positive and negative integers and decimals using the symbols =, ≠, ≤, ≥ ✓ I can round to a number of decimal places or significant figures ✓ I can add and subtract positive and negative integers and decimals ✓ I can multiply and divide positive and negative integers and decimals ✓ I can use BiDMAS in single stage calculations ✓ I can apply Place Value to real life calculations ✓ I can apply BIDMAS principles to multi stage calculations ✓ I can analyse a question and use the correct addition, subtraction, division and multiplication calculations ✓ I can analyse a problem and apply the BIDMAS principles <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit this year?</p>	<p>Keywords Decimal System: A number system using a base of 10 Digit: The individual symbols e.g. 0, 1, 2, 3 Place Value: The value of a digit depending on its position Negative numbers: A negative number is less than zero Rounding: Making a number less accurate but easier to estimate with Decimal Places: Number of digits after a decimal place Significant figures: Describes the relative importance of digits in a number First significant figure: The first digit from the left that is not a zero Partitioning: Splitting a number into smaller numbers which add up to the original number Compensation: One number is rounded to simplify the calculation, then adjusted to compensate the original e.g $142 - 39 = (142 - 40) + 1 = 102 + 1 = 103$</p> <p>Misconceptions Decimal points are not the same as significant figures Students need to remember to compensate for any rounded numbers</p>
Assessment details	
Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans	



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 2: Overview and Aims: Expressions

Students will be able to use Algebra to simply “real life situation” so students gain the skills to be able to understand the basics which underpin the ability to work with large mechanical forces and electronics.

I can statements (star the “essentials”)

- ✓ I can use algebraic notation
- ✓ I can substitute numbers into formulae and expressions
- ✓ I can use and understand the words expressions, equations, formulae, terms and factors
- ✓ I can collect like terms and simplify expressions involving sums and products
- ✓ I can use the laws of indices
- ✓ I can multiply a single term over a bracket
- ✓ I can take out common factors in an expression
- ✓ I can apply collecting like terms and substitution methods to multi stage calculations
- ✓ I can analyse a question and use the correct application of algebraic notation
- ✓ I can analyse a problem and solve it using the laws of indices

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit this year?

Critical Content, Keywords and Additional Notes.

Expression: A collection of letters and numbers without an = sign e.g. $y \times 13$
 Equation: Contains an = sign and an unknown letter to be solved
 Formula: Contains an = sign and describes a relationship between 2 or more letters
 Term: One of the quantities in an expression, linked by addition or subtraction
 Substitution: Replacing a letter with a number and working out the value
 Unknown: An unknown quantity represented by a letter
 Index Base Power: In index notation, the index or power shows how many times the base has to be multiplied
 Indices: Plural of Index
 Index laws: set of rules for calculating with numbers written in index notation
 Coefficient: A number in front of a letter that shows how many of that letter are needed e.g. $6x + 16$ would be the coefficient
 Brackets: Used to show part of an expression that needs to be evaluated first
 Simplify: Expand brackets, collect like terms or factorise to make an expression easier to use
 Highest common factor : HCF the largest number or algebraic expression that divides exactly into two or more expressions
Misconceptions
 Everything inside the bracket needs to be multiplied by what is outside e.g.
 $6(2+1) = 6 \times 2 + 6 \times 1$
 3 squared is NOT 3×2 it is 3×3

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 3: Overview and Aims: Angles and Polygons

Students will be able to use angles and polygons in order to create real life items, such as tiling. Students will gain the knowledge of angles and polygons in order to be able to apply this to real life situations

I can statements (star the "essentials")

- ✓
- ✓ I can describe the properties of angles at a point and on a line
- ✓ I can find and use the sum of angles in a triangle
- ✓ I can find the properties and definitions of special types of quadrilaterals
- ✓ I can Identify congruence and similarity
- ✓ I can find out and use the angle sum in any polygon and state the properties of regular polygons
- ✓ I can solve geometrical problems on coordinate axis
- ✓ I can apply the properties and definitions of special types of quadrilaterals
- ✓ I can analyse and solve geometrical problems on coordinate axis

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit this year?

Critical Content, Key Words and Additional Notes.

Keywords

Acute Angle: smaller than a right angle
 Right angle: 90° or a quarter turn
 Obtuse angle: Larger than 90° but smaller than 180°
 Reflex angle: Greater than 180° but less than 360°
 Alternate angles: a Z angle
 Corresponding angles: F angle
 3 figure bearing: A direction defined by a 3 figure angle measured from north
 Polygon: A 2D shape with straight edges
 Regular: All sides and angles are equal
 Triangle: 3 sided polygon
 Quadrilateral: 4 sided Polygon
 Congruent: Same shape and size
 Similar: Same shape, different size
 Scale factor: ratio of corresponding lengths in similar shapes
 Interior Angle: Angle inside a polygon
 Exterior Angle: Angle outside a polygon

Misconceptions

Students often mix up congruent and similarity and Obtuse and reflex
 Students often miss the zero when looking at acute bearings

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 4 : Overview and Aims: Handling data 1

Students will gain skills allowing them to analyse, interpret and present data, which in turn will allow them to understand the data which surrounds us. E.g. cost comparison

I can statements (star the “essentials”)

- ✓ I can construct a frequency table
- ✓ I can construct a two way table#
- ✓ I can construct a pie chart
- ✓ I can identify mean, median and mode
- ✓ I can interpret a frequency and two way table
- ✓ I can interpret a pie chart
- ✓ I can identify outliers in data and calculate the range
- ✓ I can analyse frequency tables and two way tables
- ✓ I can analyse data and create a chart which is suitable to the type of data collected
- ✓ I can compare and evaluate distributions using mean, median, mode, range and outliers

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit this year?

Critical Content, Keywords and Additional Notes.

Keywords

Population: The whole group of people in an investigation

Sample: A set chosen to represent a population

Survey: Data gathering from a sample

Data collection sheet: A sheet on which data can be recorded and organised

Tally chart: A data collection sheet collected by counting

Frequency table: A table recording frequency of data

Frequency: How often something happens

Pictogram: A frequency diagram using pictures to represent number of units of data

Bar chart: The height of each bar represents the frequency

Bar line chart: The length of each line represents the frequency

Pie Chart: A circular chart divided into sectors. The angle is proportional to the frequency

Mean: An average found by adding all the values together and dividing by the number of values

Mode: The value the value that occurs most often

Median: The middle value when the data is in order

Range: Largest – smallest value

Outlier: A value that lies outside most of the other values in a set of data

Misconceptions

Students often confuse Mean, Median, Mode and do not order all data numerically

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 5: Overview and Aims: Fractions, decimals and percentages

Students will gain skills allowing them to analyse, interpret real world uses of fractions decimals and percentages. Whether this is on a food carton or calculating percentage discount in a sale

I can statements (star the “essentials”)

- ✓ I can convert between decimals and fractions
- ✓ I can compare decimals and fractions using \geq and \leq
- ✓ I can find fractions and percentages of an amount

- ✓ I can add and subtract simple fractions and mixed numbers
- ✓ I can multiply and divide simple fractions and mixed numbers

- ✓ I can convert between fractions, decimals and percentages
- ✓ I can analyse a problem and I can solve it using fractions, decimals and percentages

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit this year?

Critical Content, Keywords and Additional Notes.

Keywords

Fraction: A fraction compares the size of a part with the size of a whole. All the parts that make up the whole have to be the same size.

Equal: Exactly the same quantity or size.

Numerator: The part of a fraction above the line.

Denominator: The part of a fraction below the line.

Mixed Number: A number containing a whole number and a fraction

Improper fraction: A fraction with the numerator larger than the denominator.

Decimal: A way of expressing values of fractions less than 1.

Decimal Equivalent: A number written as a decimal that has the same value as a fraction or percentage.

Common Factor: A factor that is shared by two or more numbers.

Cancel: Common factors in the numerator and denominator of a fraction can be ‘cancelled’.

Lowest common denominator (LCD): The smallest number into which the denominators of two or more fractions will divide.

Ascending: Going up.

Descending: Going down.

Terminating: A decimal with a definite number of digits.

Recurring: A decimal with a repeating pattern that goes on forever.

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 6: Overview and Aims: Formulae and functions

Students will gain skills allowing them to analyse, interpret real world uses of formulae and functions. Working with formula is a topic within algebra and can be used when calculating patients doses in nursing

I can statements (star the "essentials")

- ✓ I can substitute numerical values into formulae and expressions
- ✓ I can rearrange formulae to change the subject
- ✓ I can identify inequalities, equations, formulae and identities
- ✓ I can expand double brackets
- ✓ I can multiply and divide simple fractions and mixed numbers
- ✓ I can factorise quadratic expressions using double brackets
- ✓ I can apply inequalities, equations, formulae and identities to problems

Critical Content, Keywords and Additional Notes.

Variable: A letter used to represent a number.

Like Terms: Terms that contain exactly the same variables and exactly the same powers.

Function Machine: A diagram that indicates the order in which operations have to be done.

Input: The value put in to a function.

Output: The end value of a function after the operations have been applied.

Operation: An operation is a rule for processing numbers.

Inverse: The inverse operation reverses the effect of the original operation. (opposite)

Subject: The variable before the equals sign in a formula.

Rearrange: Rewrite an equation or formula as an equivalent version with a different variable as the subject.

Identity: An equation that is true for every possible value.

Function: A function is a rule that links each input value with one output value.

Expand: Remove the brackets in an expression by multiplying.

Factorise: Find common factors in an expression and write it using brackets; the reverse of expanding.

Quadratic: A quadratic expression contains a square term such as x^2 as the highest power.

Misconceptions

Students often misuse inverse, conscious efforts to re-enforce the inverse operations of \times , \div , $+$ and $-$



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 7: Overview and Aims: working in 2D

Students will learn how to accurately measure lines, angles and draw line segments. They will be able to draw and measure bearings and then apply them to real life situations. They will also learn how to use various formula relating to area and perimeter and will identify and describes transformations

I can statements (star the "essentials")

- ✓
- ✓ I can measure and draw line segments and angles
- ✓ I can use standard units for length and time
- ✓ I can use and apply bearings
- ✓ I can interpret maps and scale drawings
- ✓ I know how to apply formula to calculate area and perimeter of triangles and parallelograms

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit his year?

Critical Content, Keywords and Additional Notes.

Keywords

Length: is a measure of distance

Angle: The amount that one straight line is turned relative to another that it meets or crosses.

Area: The amount of space occupied by a 2D shape.

Perimeter: The total distance around the edges that outline a shape.

Transformation: A geometric mapping that takes the points in an object to points in an image.

Translation: A transformation in which all the points in the object are moved the same distance and in the same direction.

Reflection/mirror line: A transformation that moves points to an equal distance on the opposite side of a mirror line.

Rotation: A transformation that turns points through a fixed angle whilst keeping their distance from the centre of rotation fixed.

Enlargement: A transformation that moves points a fixed multiple, the scale factor, of their distance from the centre of enlargement.

Invariant: Does not change under a transformation.

Misconceptions

Fixed point rotations must rotate around the point, not an angle

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 8: Overview and Aims: Probability

The world is full of uncertainty from unpredictable shooting stars or man-made events like the results of a sporting match. You apply probability every day, for example “should I take an umbrella” A basic understanding of probability allows you to be more prepared whatever life throws at you

I can statements (star the “essentials”)

- ✓
- ✓ I can use experimental data to estimate probabilities and expected frequencies
- ✓ I can calculate theoretical probabilities and expected frequencies using the idea of equally likely events
- ✓ I can compare theoretical probabilities with experimental probabilities
- ✓ I can recognise and analyse mutually exclusive events
- ✓ I can recognise and analyse exhaustive events and know that the probability of mutually exclusive exhaustive events sum to 1

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit his year?

Critical Content, Keywords and Additional Notes.

Keywords

Trial: An activity or experiment.

Outcome: The result of a trial

Event: One or more outcomes of a trial.

Impossible: It cannot happen. The probability of it happening is 0.

Certain: It must happen. The probability of it happening is 1.

Likely: It has a better chance of happening than not happening. The probability is more than 0.5 and less than 1.

Unlikely: It has a worse chance of happening than not happening. The probability is more than 0 and less than 0.5.

Equal chance: It has exactly the same chance of happening as not happening. The probability of it happening is 0.5.

Relative frequency: The experimental probability of an outcome after several trials is :Number of times the outcome happened ÷ Number of times the activity was done

Expected frequency: How many times you expect the outcome to happen.

Number of trials X probability of the event

Theoretical probability: The predicted value found by Number of ways the outcome could happened ÷ Number of possible outcomes

Bias/Biased: All outcomes are not equally likely.

Equally likely: All outcomes have the same probability of happening.

Assessment details

Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 9	
Overview and Aims: Measures and accuracy Students will need to rely on accurate decimals when using, money, measuring or using timing. It will also be important to be able to even the smallest decimals.	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ ✓ I can round numbers and measures to an appropriate degree of accuracy ✓ I can use approximation to make estimates ✓ I can check calculations using approximation and estimation ✓ I can use standard units of length, mass, volume, capacity, time and area ✓ I can use inequality notation to state error intervals and interpret limits of accuracy <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Approximation: A less accurate value of a number, usually obtained by rounding, which is easier to work with.</p> <p>Estimate: A calculation made using approximate values or a judgement. Use the symbol \approx to show approximations have been used.</p> <p>Significant figures: Describes the relative importance of digits in a number. A number can be rounded to a given number of significant figures:</p> <p>Mass: A measure of the amount of matter in an object. Weight measures the force of gravity on a mass.</p> <p>Capacity: A measure of the amount of fluid that a 3D shape will hold.</p> <p>Volume: A measure of the amount of 3D space occupied by an object.</p> <p>Speed: A measure of the distance travelled by an object in a certain time.</p> <p>Density: A measure of the amount of matter in a certain volume.</p> <p>Accuracy: How close a measured or calculated quantity is to the exact value.</p> <p>Implied Accuracy: The accuracy of a value implied from the number of significant figures or decimal places given.</p> <p>Misconceptions</p> <p>Volume is not the same as capacity</p>
Written assessment of all I can questions, various methods should also be taken into account in order to be able answer all I cans	



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 10	
Overview and Aims: Equations and Inequalities Students will need to rely on accurate decimals when using, money, measuring or using timing. It will also be important to be able to even the smallest decimals.	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none">✓✓ I can find and solve simple linear equations✓ I can solve quadratic equations algebraically by factorising✓ I can find and solve two linear simultaneous equations in two variables✓ I can find approximate solutions to two linear simultaneous equations using a graph✓ I can solve linear inequalities in one variable and represent the solution on a number line <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Balance method: A method for solving an equation by performing the same operation on both sides</p> <p>Quadratic: A Quadratic expression contains a square term such as x^2 as the highest power</p> <p>Factorising: writing an expression as two or more different expressions multiplied together</p> <p>Solve Solution: Find a value for an unknown variable that will make the equation true</p> <p>Simultaneous equations: Two or more equations that are true at the same time for the same values of the variables</p> <p>Inequality: A comparison of two quantities that may not be equal</p> <p>This section could also form a quick guide for teachers who want to recap the content from this unit.</p> <p>Misconceptions</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 11	
Overview and Aims: Circles and constructions Students will learn how to identify and apply circle definitions, properties and formula. They will also construct triangles using rule and compass and solve problems using Loci	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ ✓ I can identify and apply circle definitions, properties and formulae ✓ I can construct triangles ✓ I can use the standard ruler and compass constructions ✓ I can solve Loci problems <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Circle: The 2D shape formed by all the points that are the same distance away from the centre point.</p> <p>Diameter: A straight line joining two points on a circle that pass through its centre.</p> <p>Radius: A line drawn from the centre of the circle to the circumference.</p> <p>Circumference: The perimeter of a circle.</p> <p>Arc: Any part of the circumference.</p> <p>Chord: A straight line joining two points on the circumference of a circle.</p> <p>Tangent: A line which touches the circle at one point only.</p> <p>Segment: The shape enclosed by an arc and a chord.</p> <p>Sector: The shape enclosed by two radii and an arc.</p> <p>Construct: Draw something accurately using compasses and a ruler.</p> <p>Construction lines: Lines drawn during a construction that are not part of the final object.</p> <p>Bisect: Cut into two parts of the same shape and size.</p> <p>Angle Bisector: A line which bisects an angle.</p> <p>Perpendicular bisector: A line which bisects another line at right angles.</p> <p>Locus/Loci: A set of points which satisfy a set of rules /The path followed by a moving point.</p> <p>Misconceptions</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 12	
Overview and Aims: Ratio and proportion Students will use fractions and percentages to describe proportion, write a ration in its simplest form and divide into ratios, use scale factors, diagrams and maps and solve problems using percentage change and scale factors	
I can statements (star the “essentials”) <ul style="list-style-type: none">✓ I can use fractions and percentages to describe proportion✓ I can write a ratio in its simplest form and divide a quantity in a given ratio✓ I can use scale factors✓ I can use scale factors, scale diagrams and maps✓ I can solve problems involving percentage change <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	Critical Content, Keywords and Additional Notes. <p>Keywords Proportion: A proportion is a part of the whole. Two quantities are in proportion if one is always the same multiple of the other. ratio: A ratio compares the size of one quantity with the size of another. Simplify ratio: Divide both parts by common factors. Scale: The ratio of the length of an object in a scale drawing to the length of the real object. Scale drawing: An accurate drawing of an object to a given scale. Percentage: A type of fraction in which the value given is the number of parts in every hundred. Simple interest: Interest that is calculated on the original amount only and not on any extra interest that has built up. Percentage increase: An increase by a percentage of the original amount. Percentage decrease: A decrease by a percentage of the original amount. Reverse percentage problem: Calculating the original amount from the final amount and the percentage added.</p> <p>Misconceptions What common mistakes do students make during this unit? How can a teacher combat them?</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 13	
Overview and Aims: Factors, powers and roots	
Students will recap mathematical language to describe factors, multiples and primes, use venn diagrams or factor trees to calculate HCF and LCM, use product notation and recognise powers of 2,3,4 and 5	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ I can use mathematical language to describe factors, multiples and primes ✓ I can use Venn diagrams or factor trees to systematically list the prime factors of a number ✓ I can use prime factor decomposition to calculate the HCF and LCM of two or more numbers ✓ I can write the HCF and LCM using product notation ✓ I can calculate positive integer powers and their roots ✓ Recognise powers of 2, 3, 4 and 5 <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords:</p> <p>Multiple: The original number multiplied by an integer (a whole number). factor: A number that divides exactly into another number. Prime number: A number that has only two factors, itself and one. Prime factor: A factor that is a prime number. Prime factor decomposition: Writing a number as a product of its prime factors. Common factor: A factor that is shared by two or more numbers. HCF: The largest factor that is shared by two or more numbers. LCM: The smallest multiple that is shared by two or more numbers. Square number: To square a number multiply it by itself. Square numbers have integer square roots. Square root: A number that when multiplied by itself is equal to the number underneath the square root symbol. Cube number: To cube a number multiply it by itself and then by itself again. Cube numbers have cube roots that are integers. Cube root: A number that when multiplied by itself and then by itself again is equal to the number underneath the cube root symbol.</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 13	
Overview and Aims: Graphs 1 Students will learn to work with coordinates in all 4 quadrants, plot line graphs, use formula to calculate gradient plot and interpret graphs using distance, speed and acceleration	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ I can work with coordinates in all four quadrants ✓ I can plot straight-line graphs including diagonal, vertical and horizontal lines ✓ I can identify gradients and intercepts of straight lines graphically and algebraically ✓ I can use the form $y = mx + c$ to identify parallel lines ✓ I can use one point and the gradient of its line to find its equation ✓ I can use two points to find the equation of a line ✓ I can interpret the gradient of a straight line graph as a rate of change ✓ I can plot and interpret graphs involving distance, speed and acceleration <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Coordinate grid: An origin and a set of x and y axes that allow you to specify a point.</p> <p>Gradient: A measure of the slope of a line on a graph found by dividing the change in y by the change in x.</p> <p>y-intercept: The point at which a straight line graph crosses the y-axis</p> <p>$y = mx + c$: The standard way to write the equation of a straight line. m = gradient, 0 = y-intercept</p> <p>Distance-time graph: Shows the relationship between distance moved by an object and time.</p> <p>Speed: How for an object travels in a unit of time. It is given by the gradient of a line on a distance-time graph.</p> <p>Acceleration: How much an object's speed changes in a unit of time.</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 15	
Overview and Aims: working in 3D Students will learn how to identify number of faces, edges and vertices in 3D shapes; construct and interpret plans and elevations of 3D shapes; Calculate the volume and surface area of cuboids, cylinders and other prisms	
I can statements (star the "essentials") <ul style="list-style-type: none">✓ I can identify the number of faces, edges and vertices of 3D shapes✓ I can construct and interpret plans and elevations of 3D shapes✓ I can calculate the volume and surface area of cuboids, cylinders and other prisms✓ I can calculate the volume and surface area of spheres, pyramids, cones and composite solids 2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?	Critical Content, Keywords and Additional Notes. Keywords Face: A flat surface of a solid. Edge: A line along which two faces meet. Vertex/Vertices: A point at which two or more edges meet. Cube: A 3D solid with 6 identical square faces, 12 equal edges and 8 vertices. Cuboid: A 3D solid with 6 rectangular faces. A cuboid is a rectangular prism. Prism: A 3D solid with a constant cross-section. Pyramid: A 3D solid with a polygon as its base. All the other faces are triangular in shape and meet at a single vertex. Net: A 2D shape that can be folded to make a 3D solid. Plan: A 2D representation of an object as seen from above. Elevation: A 2D representation of an object as seen from the front or side. Surface area: The total area of all the faces of a 3D solid. Volume: The amount of space occupied by, or inside, a 3D shape. Cylinder: A prism with a circular cross-section. Cone: A solid with a circular base and one vertex. Sphere: A solid with every point on its surface the same distance from the centre.



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 16	
Overview and Aims: Handling data 2 Students will be learning to interpret and construct tables, graphs and charts for discrete, continuous and grouped data. Compare distributions using mean, median and modal class to interpret distributions, draw and analyse scatter graphs and interpret and construct line graphs for time series data	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ I can interpret and construct tables, graphs and charts for discrete, continuous and grouped data ✓ I can use the median, mean and modal class and range to interpret and compare distributions ✓ I can use correlation to describe scatter graphs but know that it does not imply causation ✓ Draw estimated lines of best fit and make predications but understand their limitations ✓ I can interpret and construct line graphs for time series data <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Modal Class: The most commonly occurring class in a set of grouped data</p> <p>Estimated mean: An estimate for the mean of the data using an approximation for the total of the values. This approximation is found by multiplying the midpoint of each group by the frequency.</p> <p>Scatter graph: A graph that shows how two sets of numerical data are related.</p> <p>Line of best fit: The single line that best represents the general direction of a set of points</p> <p>Correlation: If the points lie roughly on a straight line there is a correlation between the two variables. It is a measure of how strongly they appear to be related.</p> <p>Time series graph: A graph that shows how a measurement changes with time.</p> <p>Line graph: A graph where points are joined with straight lines.</p> <p>Trend: The direction in which data appears to head as it changes over time.</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 17	
Overview and Aims: Calculations 2 Students will recap and apply previous knowledge on how to calculate roots with integer indices, calculate exactly with fractions and multiples of π . Calculate with and interpret numbers written in standard form	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ I can calculate with roots and with integer indices ✓ I can calculate exactly with fractions and multiples of π ✓ I can calculate with and interpret numbers written in standard form <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Index base power: In index notation, the index or power shows how many times the base has to be multiplied by itself. The plural of index is indices.</p> <p>Index Laws: The rules for how to multiply, divide or raise to a power numbers written as powers of the same base.</p> <p>Square root: A number that when multiplied by itself is equal to the number underneath the square root symbol.</p> <p>Cube root: A number that when multiplied by itself and then by itself again is equal to the number underneath the cube root symbol.</p> <p>Terminating: A decimal with a definite number of digits.</p> <p>Recurring: A decimal with a repeating pattern that goes on forever.</p> <p>Pi π: The number obtained by dividing the circumference of any circle by its diameter.</p> <p>Exact calculation: A calculation that does not involve decimals that have been rounded or other approximations. Exact answers are given in terms of integers, fractions and 11'.</p> <p>Standard form: A number written as a decimal between '1 and 10 multiplied by a power of 10.</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 18	
Overview and Aims: Graphs 2 Students will recap prior learning using line and quadratic graphs, they will also draw graphs to identify and interpret roots, intercepts and turning points of quadratic functions. Solve quadratic equations using a graph. Recognise, sketch and interpret graphs of linear, quadratic cubic and reciprocal functions. Plot and interpret real life graphs.	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none">✓ I can draw graphs to identify and interpret roots, intercepts and turning points of quadratic functions✓ I can solve a quadratic equation by finding approximate solutions using a graph✓ I can recognise, sketch and interpret graphs of linear, quadratic, cubic and reciprocal functions✓ I can plot and interpret real life graphs <p>If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?</p> <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p><u>Keywords</u></p> <p>Quadratic function: A function of the form $ax^2 + bx + 0$. They have a characteristic U or \cap shape.</p> <p>Cubic function: A function of the form $ax^3 + bx^2 + cx + d$. They have a characteristic S-shape.</p> <p>Reciprocal function: A function of the form c/x. They have two parts for negative and positive x.</p> <p>Turning points: A point on a curve where the curve changes from rising to falling, \cap or falling to rising, U</p> <p>Root: The points where curve crosses the x-axis.</p> <p>y – intercept: The point where a curve crosses the y-axis.</p> <p>Solve solution: Find a value for the unknown variable that will make the equation true.</p>



SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit Name: 19	
Overview and Aims: Pythagoras and trigonometry Students will know and understand how to apply $a^2 + b^2 = c^2$, know the trigonometric ratios sin, COS and tan. Write column vectors and draw vector diagrams	
I can statements (star the "essentials")	Critical Content, Keywords and Additional Notes.
<ul style="list-style-type: none"> ✓ I can use the formulae for Pythagoras' theorem: $a^2 + b^2 = c^2$ ✓ I Use the trigonometric ratios and apply them to find angles and lengths ✓ J Know the exact values of sin θ and cos θ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90° and tan θ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°. ✓ Write column vectors and draw vector diagrams. ✓ Add, subtract and find multiples of vectors. <p>2018/19 (prior years) – Strengths and Weaknesses Strengths: What did students do well in this unit this year? Weaknesses: What did students do badly in this unit his year?</p>	<p>Keywords</p> <p>Hypotenuse: In a right-angled triangle, the longest side opposite the right angle.</p> <p>Pythagoras' theorem: For a right-angled triangle, $c^2 = a^2 + b^2$ where c is the hypotenuse.</p> <p>Adjacent: The side next to the labelled angle in a rightangled triangle.</p> <p>opposite: The side opposite the labelled angle in a right-angled triangle.</p> <p>Sine ratio: In a right-angled triangle, the ratio of the length of the opposite side to the hypotenuse.</p> <p>Cosine ratio: In a right-angled triangle, the ratio of the length of the adjacent side to the hypotenuse.</p> <p>Tangent ratio: In a right-angled triangle, the ratio of the length of the opposite side to the adjacent side.</p> <p>Scalar: A quantity with just size.</p> <p>Vector: A quantity with both size and direction.</p> <p>Resultant: The vector that is equivalent to adding or subtracting two or more vectors.</p> <p>Multiple: The original vector multiplied by a scalar.</p>



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Unit 20: Overview and Aims: Probability of combined events

Students will have learned how to use Venn diagrams, construct probability trees and how to record and calculate outcomes and probabilities

I can statements (star the "essentials")

- ✓ I know what a Venn diagram is
- ✓ I can use a Venn diagram to record outcomes
- ✓ I can use a Venn diagram to calculate probabilities
- ✓ I can construct possibility spaces and use these to calculate probabilities
- ✓ I know what independent and dependant variables are
- ✓ I can use tree diagrams to show frequencies and probabilities of 2 events
- ✓ I can apply my knowledge of tree diagrams to calculate probability of independent and dependent variables

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit his year?

Critical Content, Keywords and Additional Notes.

Set : A collection of numbers or objects

Member Element : A member or element of a set is one of the objects contained in that set

Universal set E : Once defined this is the set containing all the elements

Empty Set {} : The empty set has no members

Intersection, \cap : The intersection of 2 or more sets is the single set containing only members that are common to all

Union, U : The union of 3 or more sets is the single set containing all the members of the original sets

Complement : The complement of a set is all the members which are in that set but are in the universal set The complement of A is A'

Venn diagram : Shows the relationship between sets

Possibility Space / Sample space : A list or table that shows all the possible outcomes of one or two events

Frequency tree : A tree diagram which shows the outcomes of two events

Tree diagram: Shows the probabilities of two or more events. To find the



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	<p>probability of an event happening multiply the probabilities along the branches</p> <p>Independent : The outcome of one event does not affect what happens to the other $P(A \text{ and } B) = P(A) \times P(B)$</p> <p>Dependent : The outcome of one event affects what happens to the other $P(A \text{ and } B) \neq P(A) \times P(B)$</p>
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SUBJECT YEAR PLAN 20/21 Subject: Maths Year Group: 10.

Unit 21: Overview and Aims: Sequences

Students will have learned how to find terms of a linear sequence using various methods, will be able to recognise special types of sequence and find terms of quadratic sequences.

I can statements (star the "essentials")

- ✓ I can generate terms of a sequence from a term – term rule
- ✓ I can write an Nth term formula
- ✓ I can generate terms of a sequence from a position to term rule
- ✓ I can recognise special sequences
- ✓ I can use sequence rules to problem solve

If a teacher could only recap this unit in 5/10 minutes what would you want them to focus on?

2018/19 (prior years) – Strengths and Weaknesses

Strengths: What did students do well in this unit this year?

Weaknesses: What did students do badly in this unit his year?

Critical Content, Keywords and Additional Notes.

Keywords

Sequence: A set of numbers or other objects in order that follow a rule

Term : One of the separate items in a sequence

Position : A number that counts where a term appears in a sequence

Term – to – term rule : A rule that links a term in a sequence with the previous term

Position – to – term rule: A rule that links a term in a sequence with its position in the sequence

Linear / Arithmetic : A sequence that has a constant difference between the terms

If plotted on a graph, a linear relationship gives a straight line

Common difference : The difference between each term and the previous term in a linear sequence

General term nth term : A general expression that can be used to find all the terms of the sequence

Cube numbers : The sequence formed by multiplying the position number by itself three times

Triangular numbers: Form a triangle. Each successive term is formed by adding another layer to the triangle

Geometric sequence : A sequence that has a constant ratio between terms

Fibonacci – type sequence : Each term is a sum of previous terms

Quadratic sequence : A sequence in which the differences between terms form an arithmetic sequence