

MATHS

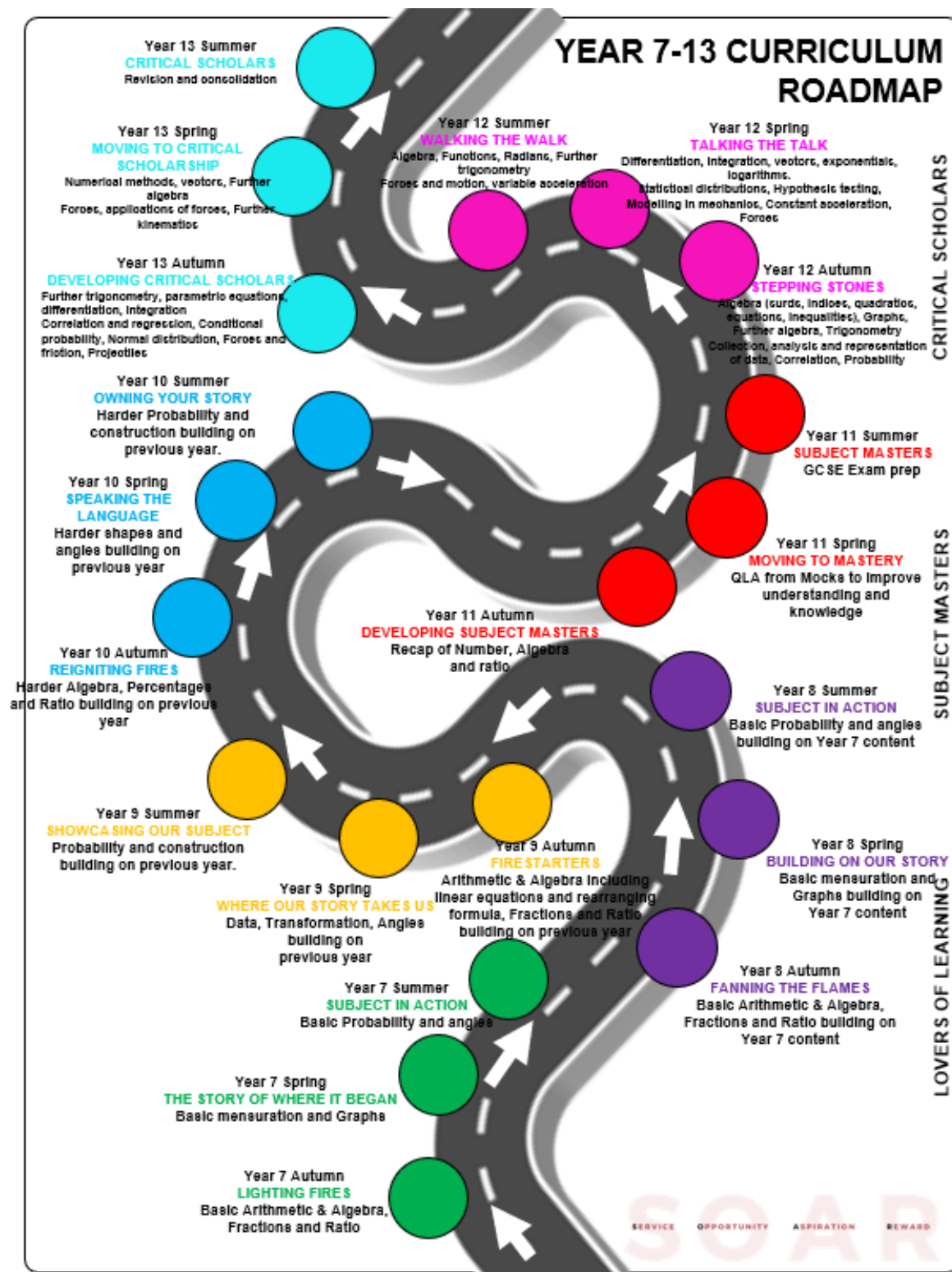


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S **O** **A** **R**

SERVICE OPPORTUNITY ASPIRATION REWARD

Maths Curriculum



Curriculum Intent

We **serve** our students with an adaptive curriculum that meets the needs of all. Our different subjects have carefully identified plans outlining, what they teach and why. This is shared with all students, staff and parents to empower our community in their learning journey and includes careful consideration of sequencing of knowledge and skills. Cardinal Pole is committed to providing **opportunities** for staff and students to become life-long lovers of learning through personalised feedback, opportunities for reflection and progression. We are a community of **aspirant** learners where teachers are experts and students are critical scholars. This is achieved through absolute clarity of expectations and constant re-evaluation of needs through a shared language. We **reward** our community of learners by celebrating the successes, progress and achievements of all.

How do all Maths lessons start? (Ready to Learn)

All lessons at Cardinal Pole start with a 'Do now' activity. The purpose of this is to support retrieval and prepares students for the lesson with recalling relevant knowledge. This activity is printed for students and handed out at the door. Students are expected to sit at their desk immediately and complete the task before sticking it in their books while the teacher welcomes the class and takes the register.

Ready to Learn activities in Maths look like this:

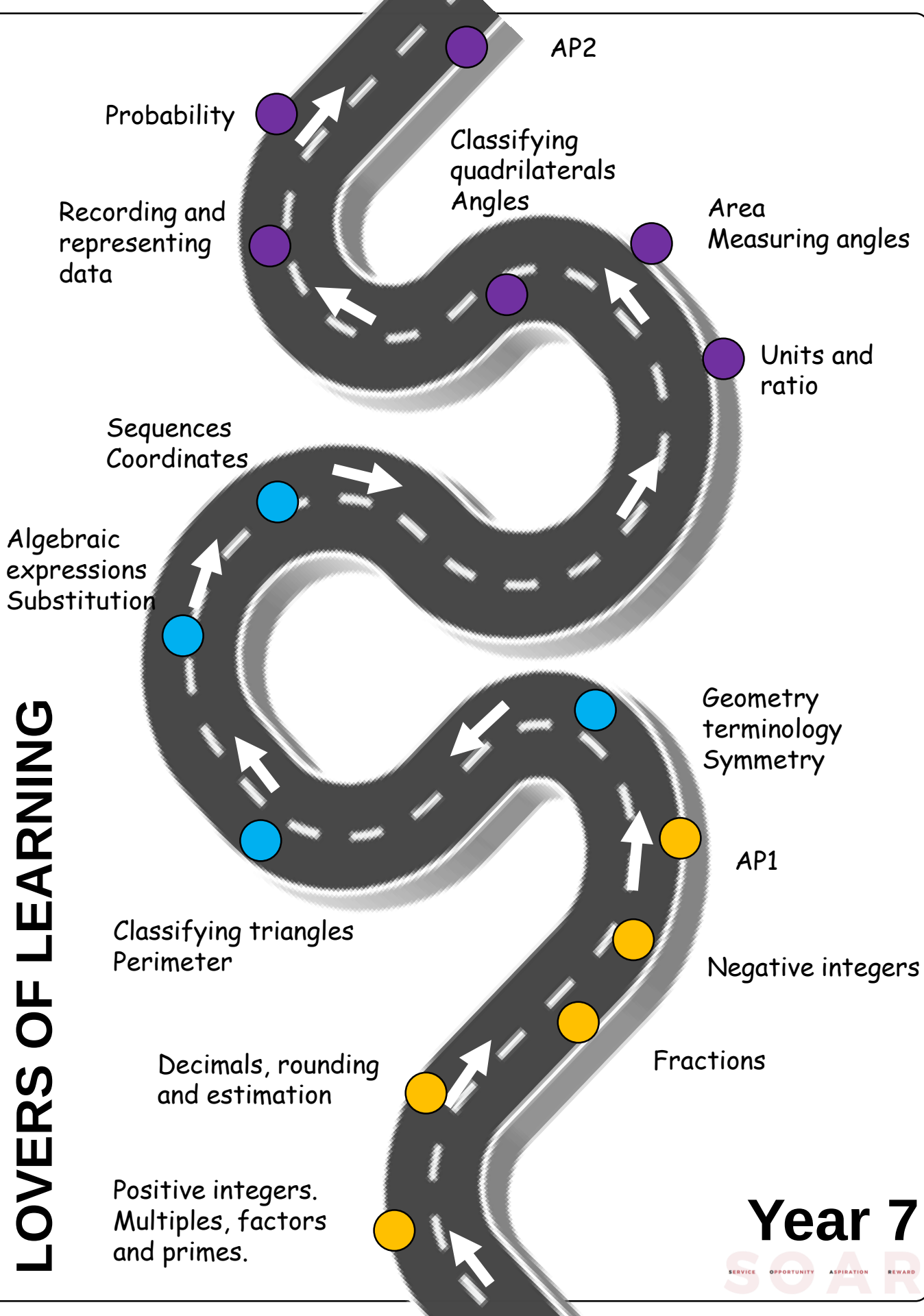
C/W READY TO LEARN Date: 09/01/2025 Title: Prime Factor Decomposition Do Now: Today's Number: 267 Answer these questions about today's number 1) Add 7089 to 267 2) Divide 267 by 3 3) Multiply 267 by 8 4) Subtract 692 from 267 (267-692) 5) Round 267 the 1 significant figure Extension: Write down a square number that is also an odd number	C/W READY TO LEARN Date: 27/09/2024 Title: Area of Triangle Do Now: Previous Lesson Find the area: 4m 7m Division workout: 280 ÷ 14 Rounding Round to 2 decimal place 3458.8729 Worded Question At a wedding, there are 16 tables. 15 tables seat 6 guests 1 table will seat 8 guests Work out the total number of chairs needed.
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Reflections

DO NOW

- 1) Expand $5a(b - 2c)$
- 2) Expand and simplify $2(x - 3) + x(3 - y)$
- 3) What is the order of rotational symmetry of:
 - a) a square?
 - b) a rectangle?
 - c) an equilateral triangle?
 - d) an isosceles triangle?

LOVERS OF LEARNING



Year 7

SERVICE OPPORTUNITY ASPIRATION REWARD

How is your progress measured in class in Maths in Y7 Autumn Term?

Number

Topic	Emerging	Achieving	Extending
Place value and powers of 10	I can read and place an integer on a place value chart	I can read and place a decimal on a place value chart	I can use my place value to multiply and divide decimals by numbers of 10
4 operations with positive integers	I can add and subtract positive integers	I can multiply and divide with positive integers	I can solve problems where I have to decide which operation to use
Powers and roots	I can calculate squares and cubes of 1 digit numbers	I can calculate square roots and cube roots of integers	I can calculate higher powers and higher roots of integers
Multiples	I can decide if a number is a multiple of another	I can find the first multiples of a number	I can find common multiples of two numbers
Divisibility, factors and primes	I can decide if a number is divisible by 2, 5, 10, 4, 3, 9	I can list all the factors of a number	I can decide if a number is prime or not
Prime factorisation	I can draw a factor tree for any integer	I can write a number as a product of primes using a factor tree and the ladder method	I can multiply numbers by an integer if they are written as the product of primes
HCF and LCM	I can find common multiples or common factors by listing	I can find the HCF and LCM by listing factors or multiples	I can find the HCF and LCM of two numbers using the L method
Ordering decimals	I can compare two decimals	I can order decimals in increasing order	I can order decimals in increasing or decreasing order
4 operations with decimals	I can add and subtract decimals	I can multiply and divide with decimals	I can solve problems that require decimal calculations
Rounding	I can round numbers to the nearest whole, 10, 100, 1000, etc	I can round numbers to decimal places	I can round numbers to significant figures
Estimation	I can approximate a calculation through rounding to 1 or 2sf	I can approximate a more complex calculation through rounding	I can decide if the approximation is an underestimate or an overestimate

Number (cont)

Topic	Emerging	Achieving	Extending
Equivalent fractions	I can decide if a fraction is in its simplest form	I can simplify a fraction by dividing the numerator and denominator by a common factor	I can decide if two fractions are equivalent
Converting between terminating decimals and fractions	I can convert a decimal to a fraction and simplify it	I can convert a fraction to a decimal when the denominator is a power of 10	I can convert a fraction to a decimal by division or equivalent fractions
Ordering fractions	I can order fractions with the same denominator	I can order fractions with the same numerator	I can order fractions with different denominators by using equivalent fractions
Proper, improper and mixed numbers	I can decide if a fraction is proper or improper	I can use a graphical representation to convert between mixed and improper fractions	I can convert between mixed and improper fractions without a diagram
4 operations with fractions	I can add and subtract fractions with equal or different denominators	I can perform the 4 operations with proper fractions	I can do the 4 operations, including mixed numbers
Calculate a fraction of an amount	I can use division to find unit fractions of an amount (e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$).	I can use multiplication and division to find non-unit fractions of an amount (e.g. $\frac{3}{4}$, $\frac{2}{3}$, $\frac{7}{10}$).	I can solve worded problems involving finding several fractions of amounts.
Ordering integers	I can compare two integers	I can order positive and negative integers	I can find the difference between two integers
4 operations with negative integers	I can increase and decrease an integer by an integer using a number line	I can add and subtract with directed numbers	I can multiply and divide with directed numbers
Order of operations	I can prioritise multiplication and division before addition and subtraction	I can prioritise powers and roots before multiplication and division	I can use the correct order of operations when there is a bracket, and add a bracket to make a calculation correct

How is your progress measured in class in Maths in Y7 Spring Term?

Geometry

Topic	Emerging	Achieving	Extending
Use and describe geometric terms	I can recognise basic geometric terms such as points, lines, parallel, perpendicular and right angles	I can describe lines and angles using correct mathematical vocabulary	I can clearly explain and justify my answers using correct maths language
Draw and label polygons	I can draw simple polygons	I can draw and label polygons with reflective symmetry	I can draw and label polygons with rotational symmetry
Symmetry	I can spot symmetry in simple shapes	I can describe lines of symmetry and rotational symmetry	I can explain symmetry in more complex shapes
Measure and draw lines	I can measure and draw lines with a ruler	I can measure and draw lines accurately	I can use measuring skills to solve problems
Classifying triangles	I can classify a triangle as equilateral, isosceles or scalene	I can describe the properties of equilateral, isosceles and scalene triangles	I can identify symmetry in triangles
Perimeter of triangles and quadrilaterals	I can calculate the perimeter of a triangle or quadrilateral given all the lengths.	I can calculate the perimeter of a triangle or quadrilateral given a few lengths.	I can find a missing length of a triangle or quadrilateral given the perimeter.

Algebra

Topic	Emerging	Achieving	Extending
Algebraic Notation	I can write simple expressions using algebraic notation	I can interpret and write algebraic expressions using powers	I can explain and manipulate algebraic notation confidently
Simplifying expressions	I can identify like terms in an expression	I can simplify expressions by collecting like terms including negatives	I can simplify more complex expressions involving negatives and multiple variables
Number machines	I can find the output of a number machine	I can find the input of a number machine	I can decide the operations of a number machine given the input and output
Substitution	I can substitute positive, whole numbers into simple expressions	I can substitute positive and negative integers into simple expressions	I can substitute into multi-step and scientific formulae accurately
Sequences	I can spot a pattern in a sequence, including arithmetic, geometric, triangular, cubes	I can generate terms/intermediate terms	I can decide if a number is a term in the sequence
Coordinates	I can plot co-ordinates in the first quadrant	I can plot and read co-ordinates in all four quadrants	I can plot and read co-ordinates in all four quadrants and describe movement between points

Ratio and proportion

Topic	Emerging	Achieving	Extending
Convert between standard units (length, mass, capacity)	I can change between simple units (e.g. cm to m, g to kg)	I can convert between related units accurately	I can solve problems using unit conversions in different contexts
Use and simplify ratios	I can write ratios using the correct format	I can simplify ratios to their simplest form	I can link ratios to fractions and use them in problems
Express one quantity as a fraction of another	I can find a fraction of a quantity	I can express one amount as a fraction of another (less than or greater than 1)	I can solve problems using fractions to compare quantities
Understand multiplicative relationships with ratios and fractions	I can recognise when quantities are compared	I can understand that ratios and fractions both compare quantities	I can explain and use ratio or fraction methods to solve problems
Divide amounts using a ratio (part to part)	I can understand what a ratio shows (how quantities compare in parts)	I can share an amount using a part : part ratio	I can solve problems where I use part : part ratios and explain my steps
Solving FDR problems	I can solve simple problems with fractions and ratio	I can solve multi-step problems with fractions and ratio	I can solve harder problems with fractions and ratio, including changing units

Geometry (cont)

Topic	Emerging	Achieving	Extending
Area of rectangles and triangles	I can find the area of rectangles and triangles given all side lengths	I can use formulas to find area of rectangles and triangles.	I can find a missing length of a rectangle or rectangle given its area.
Area and cost	I can solve simple problems with area and cost.	I can solve multi-step problems with area and cost.	I can solve harder problems with area and cost, including changing units.
Measure, draw and classify angles	I can recognise different angles	I can measure, draw and name angles correctly	I can solve problems using angles and explain my answers
Classifying quadrilaterals	I can name a square, rectangle, parallelogram, rhombus, trapezium, rhomboid (kite)	I can identify symmetry in these quadrilaterals	I can identify properties of angles in these quadrilaterals
Angles around a point, straight line, vertically opposite	I can recognise angle rules (around a point, straight line, vertically opposite)	I can find missing angles using angle rules	I can solve harder angle problems and explain my steps
Angle sums in triangles and quadrilaterals	I can remember that angles in a triangle add to 180°	I can find missing angles in triangles and quadrilaterals	I can work out and use angle rules in more complex problems

How is your progress measured in class in Maths in Y7 Summer Term?

Statistics and Probability

Topic	Emerging	Achieving	Extending
Types of data	I can classify data as quantitative or qualitative	I can classify quantitative data as discrete or continuous	I can give examples of qualitative, discrete and continuous data
Record data using tables	I can record data using tally charts	I can organise data into frequency tables	I can record data and classify
Draw and read bar charts	I can read information from a bar chart	I can draw a bar chart accurately	I can compare data using bar charts
Draw and read pictograms	I can read information from a pictogram	I can draw or complete a pictogram accurately	I can write down the key of a pictogram
Carry out and analyse random experiments	I can carry out simple probability experiments	I can record and describe the results of experiments	I can explain fairness and compare expected and actual results
Probability terminology	I can recognise simple probability words	I can use words like outcome, event and probability correctly	I can describe probability using correct notation like $P(\text{event})$
Probability scale	I can place probabilities on a scale from 0 to 1	I can describe how likely an event is using numbers	I can explain probability clearly using the full scale
Total probability	I can find a missing value on a probability table	I can find two missing values on a probability table if they are equal.	I can find two missing values on a probability table given a ratio between them.

AP2

Sample spaces
Theoretical probability
Expected frequency

Representing data: two
way tables, stem and leaf
diagrams, pie charts

Analysing data:
Mean, median,
mode, range

Angles
3D shapes
Volume of
cuboids and
prisms

Forming and solving
linear equations

Sequences
and graphs

Expanding
single
brackets
Factorising a
single term

Area of quadrilaterals
Compound shapes

AP1

Forming and simplifying expressions
Index laws

Percentages
Increasing and decreasing
by a percentage
FDP problems

Units and scale
Ratio
FDPR problems

Factors and multiples
Decimals
Fractions

Year 8

How is your progress measured in class in Maths in Y8 Autumn Term?

Number

Topic	Emerging	Achieving	Extending
Prime factorisation	<i>I can draw a factor tree for any integer</i>	<i>I can write a number as a product of primes using a factor tree and the ladder method</i>	<i>I can multiply numbers by an integer if they are written as the product of primes</i>
HCF and LCM	I can find common multiples or common factors by listing	I can find the HCF and LCM by listing factors or multiples	I can find the HCF and LCM of two numbers using the L or ladder method
HCF and LCM worded problems	I can use HCF in a real life problem	I can use LCM in a real life problem	I can decide whether to use HCF and LCM in a real life problem
Rounding	<i>I can round numbers to the nearest whole, 10, 100, 1000, etc</i>	<i>I can round numbers to decimal places</i>	<i>I can round numbers to significant figures</i>
Estimation	I can approximate a calculation through rounding to 1 or 2sf	I can approximate a more complex calculation through rounding	I can decide if the approximation is an underestimate or an overestimate
4 operations with fractions	I can add and subtract fractions with equal or different denominators	I can perform the 4 operations with proper fractions	I can do the 4 operations, including mixed numbers
Fraction of an amount	I can use division to find unit fractions of an amount (e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$).	I can use multiplication and division to find non-unit fractions of an amount (e.g. $\frac{3}{4}$, $\frac{2}{3}$, $\frac{7}{10}$).	I can solve worded problems involving finding several fractions of amounts.
Converting between percentages and decimal)	I can change a percentage into a decimal with one decimal place (e.g. 0.1, 0.2) and vice versa.	I can change a percentage with two digits (e.g. 17%) into a decimal with two decimal places (e.g. 0.17) and vice versa	I can express percentage which are greater than 100% as a decimal which is greater than 1.

Number (cont)

Topic	Emerging	Achieving	Extending
Converting between percentages and decimals	I can change a percentage into a decimal with one decimal place (e.g. 0.1, 0.2) and vice versa.	I can change a percentage with two digits (e.g. 17%) into a decimal with two decimal places (e.g. 0.17) and vice versa	I can express percentage which are greater than 100% as a decimal which is greater than 1.
Converting a percentage into a fraction	I can convert percentages into unsimplified fractions.	I can convert simple percentages (such as 10%, 50%, 20%, 5%, 25%) into fully simplified fractions.	I can convert percentages which are greater than 100% into improper fractions.
Converting a fraction into a percentage	I can convert fractions with a denominator of 100 into a percentage.	I can convert a fraction with a denominator that is a factor of 100 (e.g. 4 or 50) into a percentage.	I can convert fractions which have a denominator which isn't a factor of 100 (e.g. 40) into a percentage.
Percentage of an amount	I can find 10% of an amount by dividing by 10.	I can find percentages of amounts by using division and multiplication (e.g. 20%, 5%, 70%).	I can find more complex percentages of amounts by adding together different percentages (e.g. 36%).
Express one quantity as a percentage of another	I can express one quantity as a percentage of another for basic percentages: 10% and 50%.	I can express one quantity as a percentage of another using known fraction-percentage equivalents (e.g. $5\% = \frac{1}{20}$).	I can express quantities as percentages of other quantities to answer worded problems
Calculate percentage increases and decreases	I can increase or decrease an amount by 10%	I can increase or decrease an amount by 5%, 1%, 20% and 50%.	I can increase or decrease an amount by more complex percentages by finding several easier percentages (e.g. $27\% = 20\% + 5\% + 2\%$)
FDP problems	I can solve worded problems with fractions and percentages	I can solve worded problems with fractions, decimals and percentages	I can solve more complex worded problems with FDP, including different units.

Ratio and proportion

Topic	Emerging	Achieving	Extending
Units of time	I can convert times from the 24-hour clock to the 12-hour clock. I can express simple fractions of an hour as minutes (e.g. $\frac{1}{2}$ an hour = 30 mins).	I can convert times between the 12-hour and 24-hour clock. I can express quantities of minutes as fractions of an hour using a denominator of 60.	I can express fractions of an hour in minutes. I can express some amounts of minutes as decimal amounts of hours (e.g. 45 minutes)
Scale diagrams and maps	I can use scale to work out a length by multiplying	I can use scale to work out a length by multiplying or dividing	I can use scale that requires to convert between units
<i>Divide amounts using a ratio (unequal sharing) (part to part)</i>	<i>I can understand what a ratio shows (how quantities compare in parts)</i>	<i>I can share an amount using a part : part ratio</i>	<i>I can solve problems where I use part : part ratios and explain my steps</i>
Dividing into a ratio (total:part or difference:part)	I can share a total amount into two or three parts using a given ratio	I can solve ratio problems when I know the difference between two parts.	I can solve mixed ratio problems (part:part, total:part or difference:part)
FDPR problems	I can solve simple problems with fractions, decimals, percentages or ratio	I can solve problems with fractions, decimals, percentages and ratio	I can evaluate my answers to harder problems and verify them.

How is your progress measured in class in Maths in Y8 Spring Term?

Geometry

Topic	Emerging	Achieving	Extending
Units of area	I can convert from m^2 to cm^2 , or cm^2 to mm^2	I can convert from mm^2 to cm^2 or cm^2 to m^2	I can solve area problems by converting to the same unit
Area of rectangles and triangles	<i>I can find the area of rectangles and triangles given all side lengths</i>	<i>I can use formulas to find area of rectangles and triangles.</i>	<i>I can find a missing length of a rectangle or rectangle given its area.</i>
Perimeter and area of parallelograms and trapezia	I can calculate the area of parallelograms by using $\text{base} \times \text{perpendicular height}$.	I can use formulae to calculate the area of parallelograms and trapezia.	I can solve problems involving area of parallelograms and trapezia, including finding missing lengths when the area is given.
Perimeter of compound shapes	I can find the perimeter of simple shapes by adding lengths of sides	I can calculate the perimeter of compound shapes that require a subtraction	I can solve problems involving missing lengths and perimeter, including cost
Area of compound shapes (2)	I can find the area of simple compound shapes by splitting into rectangles	I can calculate the area of compound shapes that require a subtraction	I can solve problems involving area of compound shape, including cost

Algebra

Topic	Emerging	Achieving	Extending
Simplifying expressions (2)	<i>I can identify like terms in an expression</i>	<i>I can simplify expressions by collecting like terms including negatives</i>	<i>I can simplify more complex expressions involving negatives and multiple variables (i.e. x and x^2)</i>
Forming algebraic expressions	I can form simple algebraic expressions from short descriptions (e.g. y plus 3)	I can form algebraic expressions from written sentences or real-life contexts	I can form algebraic expressions involving perimeter and area
Laws of indices: multiplication, division, power law, zero	I can use the multiplication, division and power laws to simplify basic expressions	I can use the index laws to simplify expressions with coefficients	I can use the index laws to simplify complex expressions.
Expanding single brackets	I can multiply a single bracket by a positive or negative constant	I can multiply a single bracket by a positive or negative variable	I can multiply a single bracket by a decimal or fractional term
Factorising single brackets	I can factorise expressions by taking out a common factor, positive or negative	I can factorise expressions by taking out a variable.	I can factorise expressions by taking out multiple variables
Solving linear equations (4)	I can solve one-step equations.	I can solve two-step equations.	I can solve equations including brackets.
Solving linear equations with x on both sides (2)	I can solve equations with x on both sides with positive coefficients.	I can solve equations with x on both sides with positive or negative coefficients.	I can solve equations with x on both sides with brackets.
Sequences (3)	I can spot a pattern in a sequence, including arithmetic, geometric, triangular, cubes	I can generate terms/intermediate terms	I can decide if a number is a term in the sequence
nth term of arithmetic sequences (3)	I can recognise arithmetic sequences and generate terms	I can find the n th term of an arithmetic sequence	I can determine if a number is a term in an arithmetic sequence
Coordinates (2)	<i>I can plot coordinates in the first quadrant</i>	<i>I can plot and read coordinates in all four quadrants</i>	<i>I can solve problems with coordinates</i>
Plotting linear graphs (3)	I can plot a vertical and a horizontal linear graph.	I can plot a linear graph from a completed table of values.	I can complete a table of values and plot a linear graph.

How is your progress measured in class in Maths in Y8 Summer Term?

Geometry (cont)

Topic	Emerging	Achieving	Extending
Angles on a straight line, vertically opposite	<i>I can recognise angle rules</i>	<i>I can find missing angles using angle rules</i>	<i>I can solve harder angle problems and explain my steps</i>
Angles in parallel lines	I can recognise equal angles formed by parallel lines.	I can identify corresponding and alternate angles and use the associated rules	I can solve multi-step angle problems involving parallel lines and justify my reasoning.
3D shapes: names and properties	I can identify common 3D shapes and say how many faces they have	I can identify how many faces, vertices and edges 3D shapes have	I can solve problems using properties of 3D shapes, including finding unknown values and reasoning about structures.
Units of volume	I can convert from m^3 to cm^3 , or cm^3 to mm^3	I can convert from mm^3 to cm^3 or cm^3 to m^3	I can solve volume problems by converting to the same unit
Volume of cube, cuboid and other prisms	I can calculate the volume of a cube by counting cubes or using a simple formula.	I can use formulae to calculate the volume of cuboids and prisms.	I can solve problems involving volume, including finding missing dimensions.

Probability and Statistics

Topic	Emerging	Achieving	Extending
Two-way tables	I can read information from a two-way table to find simple totals	I can complete missing values in a two-way table using row and column totals, including using subtraction	I can use a two-way table to find probabilities
Stem and leaf diagrams	I can interpret a stem and leaf diagram to identify values	I can construct an ordered stem and leaf diagram from a data set	I can interpret stem and leaf diagrams to find the mode, median, mean and range
Pie charts	I can interpret a pie chart to find the mode and read a frequency	I can construct a pie chart accurately	I can compare two pie charts
Measures of central tendency for listed data (mean, mode, median) and spread (range)	I can identify and calculate the mode, median, mean and range for listed data	I can find missing values for listed data when given the mode, median, mean and range	I can compare two data sets using averages and measures of spread
Sample spaces and theoretical probabilities	I can list all possible outcomes for a single event with equally likely outcomes	I can generate a full sample space for two combined events	I can calculate theoretical probabilities from a sample space and use them to solve multi-step problems
Total probability	<i>I can find a missing value on a probability table</i>	<i>I can find two missing values on a probability table given a relationship between them (equal, ratio)</i>	I can set up and solve an equation involving probabilities on a table.
Expected / estimated frequency vs theoretical frequency	I can use a probability to calculate an expected frequency over a given number of trials	I can use expected frequency to find the probability of an event	I can compare expected and actual frequencies to comment on bias

Constructions
Congruent triangles

AP2

Scatter graphs, Venn diagrams, averages and range, probability

Transformations, similar triangles, **trigonometric ratios**

Circumference and area of circles, volume of a cylinder

Direct and inverse proportion, compound measures

Angles in a polygon, Pythagoras
Area of compound shapes and quadrilaterals

Rearranging a formula, equation of a line

Linear equations and inequalities

Linear and quadratic graphs

Percentages and multipliers, interest, percentage change, **reverse percentages**

Expanding double **and triple** brackets, **Factorising quadratics**

Calculations, estimation and rounding
Standard form

Year 9

Bold topics are only for sets 1-5

How is your progress measured in class in Maths in Y9 Autumn Term?

Number

4 operations with negative integers	I can increase and decrease an integer by an integer using a number line	I can add and subtract with directed numbers	I can multiply and divide with directed numbers
Using a calculator	I can use a calculator to answer simple calculations	I can use a calculator to answer calculations with more than one step	I can use a calculator to answer calculations involving fractions, roots and indices.
Rounding to sf	I can identify the significant figures in a number	I can round a number to 1, 2 3 sf or more	I can decide which numbers could have been rounded to 1sf, 2sf or more
Estimation	I can approximate a calculation through rounding to 1 or 2sf	I can approximate a more complex calculation through rounding	I can decide if the approximation is an underestimate or an overestimate
Standard Form	I can convert between ordinary numbers and standard form for positive powers of 10.	I can convert between ordinary numbers and standard form with negative powers of 10.	I can order and compare numbers in ordinary and standard form.
4 operations with fractions	I can add and subtract fractions with equal or different denominators	I can perform the 4 operations with proper fractions	I can do the 4 operations, including mixed numbers
Percentage of an amount (non calc)	<i>I can find 10% of an amount by dividing by 10.</i>	<i>I can find percentages of amounts by using division and multiplication (e.g. 20%, 5%, 70%).</i>	<i>I can find more complex percentages of amounts by adding together different percentages (e.g. 36%).</i>
Percentages of amount (calculator)	I can find the multiplier equivalent of all percentage eg: 25% - 0.25	I can use the multiplier to find percentages of amounts	I can apply the multiplier to solve worded problems.
A number as a percentage of another	I can identify when a number is a simple percentage of another (10%, 25%, 50%)	I can express a number as a percentage of another with a calculator	I can apply this skill to solve worded problems
FDP problems (calc)	<i>I can solve worded problems with fractions and percentages</i>	<i>I can solve worded problems with fractions, decimals and percentages</i>	<i>I can solve more complex worded problems with FDP, including different units.</i>

Ratio, and proportion

Increasing and decreasing by a percentage (calc)	I can find the multiplier to increase or decrease by a percentage	I can calculate percentage increase/decrease using multipliers	I can solve multi-step percentage problems using multipliers.
Simple interest	I can calculate simple interest.	I can find total amounts after simple interest is applied.	I can solve problems involving simple interest over multiple time periods.
Percentage change, profit or loss	I can use the language of change/profit/loss	I can calculate the change as a percentage of the original value	I can calculate and express a percentage change as a loss or a profit.
Reverse percentages	I can write the new value as a percentage of the original	I can work out the original value given the new value	I can explain why to work out an original value you cannot add or subtract a percentage of the new value

Algebra

Topic	Emerging	Achieving	Extending
Expanding single brackets and collecting	<i>I can expand a single bracket</i>	<i>I can multiply two single brackets and collect like terms</i>	<i>I can multiply two single brackets and collect like terms with different powers (eg x and x^2)</i>
Expanding double and triple brackets	I can expand a product of two simple binomials: $(x+a)(x+b)$	I can expand products of any two binomials $(ax+b)(cx+d)$.	I can expand the product of three binomials.
Factorising quadratics with $a=1$	I can factorise quadratics of the form x^2+bx+c.	I can factorise quadratics of the form $x^2\pm bx\pm c$	I can factorise expressions involving the difference of two squares.
Set notation and the number line	I can use the notation for Natural (N) and Integer numbers (Z).	I can use the notation for Rational (Q) and Real (R) numbers	I can identify that the number line has all the real numbers (R).
Inequalities on a number line	I can draw an interval on a number line	I can write an interval from a number line using $<$, $>$, $\leq$, or $\geq$	I can represent solution sets clearly using interval notation and number lines.
Solving linear equations	<i>I can solve two-step equations.</i>	<i>I can solve equations including brackets</i>	<i>I can solve equations including fractions</i>
Solving inequalities	I can solve one-step linear inequalities	I can solve multi-step linear inequalities, .	I can solve complex inequalities

How is your progress measured in class in Maths in **Y9 Spring Term**?

Algebra (cont)

Topic	Emerging	Achieving	Extending
Rearranging a formula	I can rearrange a formula with one operation	I can rearrange a formula with two operations.	I can rearrange complex formulae.
<i>Plotting linear graphs</i>	<i>I can plot a vertical and a horizontal linear graph.</i>	<i>I can plot a linear graph from a completed table of values.</i>	<i>I can complete a table of values and plot a linear graph.</i>
Equation Of a Line	I can read the gradient and y-intercept of a line from a formula.	I can read the gradient and y-intercept of a line from its graph.	I can match graphs of lines and their equations, including horizontal and vertical lines.
Plotting and recognising quadratic graphs	I can plot simple quadratic graphs using a table of values.	I can plot quadratic graphs by completing a table of values.	I can recognise linear and quadratic graphs and match them to their equations.
Reading linear and quadratic graphs	I can use a linear or quadratic graph to find a value of y	I can use a linear or quadratic graph to find values of x or y	I can use linear or quadratic graphs to find x or y and give my answers in context

Geometry

Topic	Emerging	Achieving	Extending
Interior and exterior angles in any polygon	I can calculate the sum of interior angles in polygons using the formula and find missing angles in irregular polygons.	I can calculate the sum of interior angles in regular polygons and use it to find exterior ones and problem solve.	I can problem solve using interior angles in regular polygons to find missing angles.
Interior and exterior angles in a regular polygon	I can calculate the exterior angle of any regular polygon.	I can calculate the number of sides given the exterior angle	I can problem solve with interior and exterior angles.
<i>Area of rectangles and triangles</i>	<i>I can find the area of rectangles and triangles given all side lengths</i>	<i>I can use formulas to find area of rectangles and triangles.</i>	<i>I can find a missing length of a rectangle or rectangle given its area.</i>
Pythagoras' Theorem	I can use and substitute into Pythagoras' theorem to find the hypotenuse.	I can use and substitute into Pythagoras' theorem and rearrange to find shorter sides	I can apply my knowledge of Pythagoras' theorem to problem solve.
<i>Area of rectangles and triangles</i>	<i>I can find the area of rectangles and triangles given all side lengths</i>	<i>I can use formulas to find area of rectangles and triangles.</i>	<i>I can find a missing length of a rectangle or rectangle given its area.</i>
Perimeter and area of compound shapes	I can find the perimeter or area of simple shapes by adding lengths of sides	I can calculate the perimeter or area of compound shapes that require a subtraction	I can solve problems involving perimeter and area of compound shapes, including cost

Geometry (cont)

Topic	Emerging	Achieving	Extending
Key Circle Terminology and Applications	I can identify parts of a circle such as radius, diameter, chord and tangent.	I can draw circles accurately with a compass and identify key features.	I can draw and describe a radius, diameter, chord, tangent, sector and segment.
Circumference and Area of Circles	I can find the circumference or area of a circle given the radius or diameter.	I can calculate the perimeter and area of composite shapes involving circles.	I can rearrange the formula to find the radius or diameter of a circle given its circumference or area.
Volume of a prism	I can calculate the volume of a cuboid	I can calculate the volume of a prism	I can find a missing length of a prism given its volume.
Volume of a cylinder	I can calculate the volume of a cylinder using a formula.	I can work out the radius or the height of a cylinder if I know the volume.	I can find the length or the radius of a cylinder given its volume.

Ratio and proportion (cont)

Topic	Emerging	Achieving	Extending
Direct proportion	I can recognise when two quantities increase together and calculate the scale factor.	I can use direct proportion to find a missing value by multiplying or dividing.	I can write an equation to relate two quantities in direct proportion, and sketch its graph.
Recipes	I can scale up or down recipes with 1 step.	I can scale up or down recipes with two step (calculator and non calculator)	I can calculate recipes given the amount of one ingredient.
Best buys	I can compare value by calculating the unit price	I can compare value by scaling one quantity	I can compare value by scaling both quantities using the LCM
Exchange rates	I can convert money using a simple exchange rate.	I can calculate conversions between currencies, including decimals.	I can problem solve and assess the best value converting between currencies.
Drawing graphs from ratios	I can complete simple ratio tables and plot points from a given ratio.	I can draw graphs from ratios and recognise that they form straight lines through the origin.	I can use graphs from ratios to solve problems, including finding missing values and interpreting real-life situations.
Inverse proportion	I can recognise when one quantity decreases as another increases.	I can use inverse proportion to find a missing value.	I can write an equation to relate two quantities in inverse proportion and sketch its graph.
Speed	I can calculate speed using the formula	I can calculate distance or time by rearranging the formula	I can calculate speed, distance or time using the formula for two or more step problems
Density	I can calculate density by using the formula.	I can calculate mass or volume by rearranging the formula.	I can solve multi-step problems involving mass density and volume (including calculating the volume first)
Pressure	I can calculate force, pressure, or area by rearranging the formula.	I can solve problems involving force, pressure or area (including calculating the area first)	I can solve problems involving pressure in real-life contexts.

How is your progress measured in class in Maths in Y9 Summer Term?

Probability and Statistics

Topic	Emerging	Achieving	Extending
Scatter graphs	I can describe the correlation between two variables as positive, negative or zero (and weak/strong)	I can draw a line of best fit to make predictions.	I can justify if it is appropriate to use a line of best fit (interpolation and extrapolation)
Averages and range	<i>I can identify and calculate the mode, median, mean and range for listed data</i>	<i>I can find missing values for listed data when given the mode, median, mean and range</i>	<i>I can compare two data sets using averages and measures of spread</i>
Set notation	I can list the members of a set	I can list the elements in the intersection, union and complement of sets	I can use the notation for empty set, universal set, belongs, contains.
Venn diagrams	I can list the members of a set given the Venn diagram (2 or 3 sets)	I can complete a Venn diagram from the listed sets	I can complete a Venn diagram when I know the frequencies of specific sets
Probability from two-way tables	I can read a probability from a two-way table when an element is chosen from the total	I can read a probability from a two-way table when an element is chosen from a subset of the total	I can complete a two-way table given probabilities
Probability from Venn diagrams	I can work out the probability of choosing an element from the union, complement or intersection of 2 sets.	I can work out the probability of choosing an element from the union, complement or intersection of 3 sets.	I can work out the probability of choosing an element from the union, complement or intersection of sets with a given condition.

How is your progress measured in class in Maths in Y9 Summer Term?

Geometry (cont)

Topic	Emerging	Achieving	Extending
Translations	I can perform translations of shapes using vectors	I can describe translations of shapes using vectors.	I can identify a translation from a transformation question
Reflection	I can describe and perform a reflection from a line e.g $y = 6$	I can describe and perform a reflection from lines such as $y=x$ and $-y=x$.	I can identify a reflection from any transformation question.
Rotation	I can rotate a shape around a point by 90° or 180°	I can describe a rotation and locate the centre of rotation.	I can identify a translation from any transformation question.
Enlargement	I can describe and perform an enlargement of a positive scale factor	I can describe and perform enlargement about a point given a scale factor.	I can identify a translation from a transformation question.
Similar triangles	I can find the scale factor when a triangle is enlarged.	I can find missing lengths in similar triangles.	I can set up and solve equations to find missing lengths in similar triangles.
Trigonometric ratios	I can label the sides of a right-angled triangle (o,a,h)	I can work out the ratio of two lengths of a right-angled triangle.	I can write the ratio of two sides of a right-angled triangle as the sine, cosine or tangent of an angle.

Bisecting angles	I can bisect an acute and obtuse angle	I can bisect any size angle.	I can construct any size angle and bisect it.
Constructing Perpendicular bisectors	I can construct a perpendicular bisector from a line segment	I can construct a perpendicular bisector from a point on a line.	I can construct a perpendicular bisector from a point of a line.
Constructing Congruent Triangles	I can use a protractor to draw acute and obtuse angles.	I can construct triangles accurately using SAS and ASA	I can construct triangles accurately when I know the length of the 3 sides.
Criteria for congruent triangles	I can decide if two triangles are congruent.	I can decide which criteria makes two triangles congruent	I can write a proof that makes two triangles congruent.