

KS4 Maths

Acting Head of Department: Ms Vanina Coria



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S O A R
SERVICE OPPORTUNITY ASPIRATION REWARD

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.

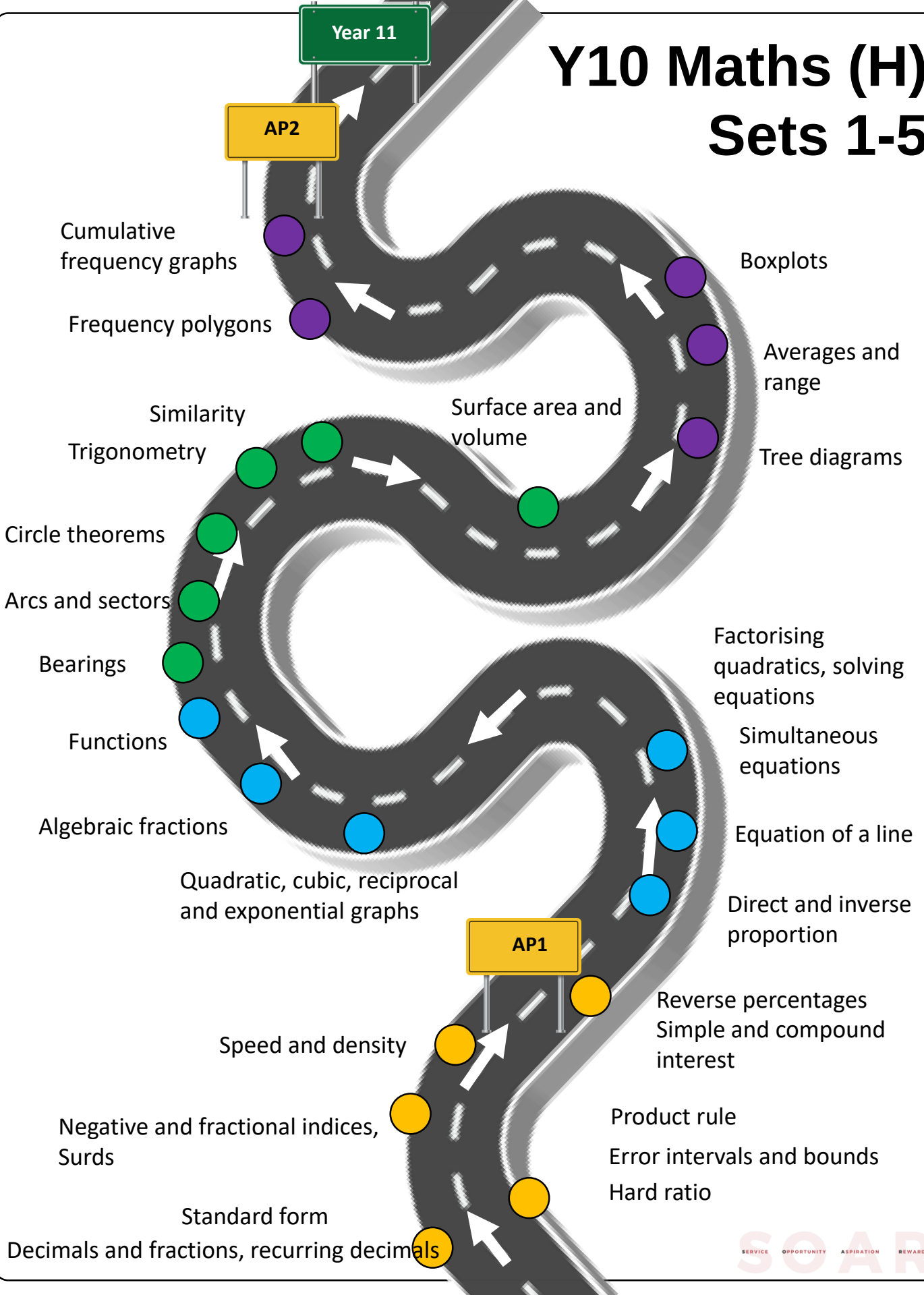
How do all KS4 Maths lessons start? (Ready to Learn)

All lessons at Cardinal Pole start with a 'Ready to Learn' activity. The purpose of this is to support retrieval and prepare 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:

Y10 Maths (H)

Sets 1-5



How is your progress measured in class in Maths in Y10H Autumn Term?

HT1: Number

Topic	Emerging	Achieving	Extending
Writing in 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.
Operations with numbers in standard form	I can multiply and divide numbers written in standard form.	I can add and subtract numbers written in standard form.	I can solve worded problems involving all four operations with numbers in standard form.
Converting terminating decimals and fractions	<i>I can convert a terminating decimal to a fraction and simplify it</i>	<i>I can convert a fraction to a decimal when the denominator is a power of 10</i>	<i>I can convert a fraction to a decimal by division or equivalent fractions</i>
Recurring Decimals	I can convert fractions into recurring decimals by division.	I can convert decimals with recurring digits into fractions	I can convert decimals with both recurring and non-recurring digits into fractions
Estimate powers and roots	I can identify square numbers, cube numbers and their roots.	I can estimate the value of powers and roots using known facts.	I can estimate and compare powers and roots, justifying the accuracy of my estimates.
Reciprocals and negative indices	I can write the reciprocal of a number as $1/\text{number}$ and simplify	I can evaluate negative indices when the base is an integer	I can evaluate negative indices when the base is fractional.
Fractional indices	I can write a power of $\frac{1}{2}$ as a square root and a power of $\frac{1}{3}$ as a cube root.	I can evaluate a fractional index when the base is an integer.	I can evaluate a fractional index when the base is not an integer.

HT1: Number (cont)

Simplifying surds	I can identify whether a number is a surd, and classify it as rational or irrational.	I can simplify surds by identifying square number factors.	I can fully simplify surds with square number factors.
Operations with surds	I can add and subtract simple surds.	I can multiply surds and expand brackets with surds, simplifying the answer.	I can solve algebraic and numerical problems involving surds.
Rationalising surds	I can identify how a denominator needs to be rationalised.	I can rationalise denominators involving a single surd.	I can rationalise more complex denominators and simplify the resulting expressions.
Error intervals	I can identify the upper and lower bounds of numbers that have been rounded.	I can identify the upper and lower bounds of numbers that have been truncated.	I can write an error interval for rounded or truncated values using inequality notation.
Bounds	I can calculate with bounds in one-step problems (adding and multiplying).	I can calculate with bounds in one-step problems (subtracting and dividing).	I can solve multi-step problems involving calculations with bounds and use suitable degrees of accuracy.
Systematic listing strategies and product rule	I can list outcomes in a simple organised way (real life scenario).	I can apply the product rule and solve counting problems.	I can identify when outcomes have been counted more than once and adjust my calculation.
Dividing in a ratio	<i>I can share a total amount into two or three parts using a given ratio</i>	<i>I can solve ratio problems when I know one part, or the difference between two parts.</i>	<i>I can solve worded problems that involve dividing in a ratio.</i>

HT2: Ratio and proportion

Harder problem solving with ratios	I can combine ratios to share amounts.	I can solve problems involving ratios and fractions with no total given.	I can solve complex ratio problems involving algebraic expressions.
Increasing and decreasing by a percentage (calc)	<i>I can find the multiplier to increase or decrease by a percentage</i>	<i>I can calculate percentage increase/decrease using multipliers</i>	<i>I can solve multi-step percentage problems using multipliers.</i>
Growth and decay	I can write a multiplier for growth or decay by a certain percentage	I can calculate the value after a growth or decay (1 step)	I can calculate the value after a growth or decay (2 steps, no formula)
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.
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.
Compound Interest and depreciation	I can calculate compound interest given the present value, interest rate and years	I can use the compound interest formula to compare the best offer.	I can use the compound interest formula to find the rate of interest/depreciation or the number of years.
Speed and density	I can calculate speed or density using a formula.	I can use speed or density to calculate a missing value.	I can solve problems with speed or density that require combining two legs of a journey or two mixed compounds.

Assessment Point 1

What is assessed?	% of course	Why?
Content learnt up to this point in the year.	60%	To measure progress towards GCSE target grade.

Direct and inverse proportion (numeric)	<i>I can solve direct proportion problems by multiplying both variables by the same constant.</i>	<i>I can solve inverse proportion problems by multiplying a variable and dividing the other by the same constant.</i>	<i>I can identify when to use direct or inverse proportion in worded problems.</i>
Direct Proportion, algebraic	I can set up and use the equation for two variables in direct proportion	I can set up and use the equation for two variables in direct proportion including powers and roots.	I can solve harder problems that involve two equations of direct proportion.
Inverse Proportion, algebraic	I can set up and use the equation for two variables in inverse proportion	I can set up and use the equation for two variables in direct proportion including powers and roots.	I can solve harder problems that involve two equations of direct/inverse proportion.

How is your progress measured in class in Maths in Y10H Spring Term?

HT3: Algebra

Topic	Emerging	Achieving	Extending
Equation Of a Line	<i>I can read the gradient and y-intercept of a line from a formula, even if it needs rearranging.</i>	<i>I can identify the gradient and y-intercept of a line from its graph.</i>	<i>I can match graphs of lines and their equations, including horizontal and vertical lines.</i>
Gradient of real life linear graphs	I can calculate the gradient of a real life linear graph	I can describe the gradient as a rate of change	I can state the units of the gradient of a real life graph
Equation of a line through p oints	I can find the gradient of a line, given the coordinates of two points	I can find the equation of a line in the form $y = mx + c$ given the gradient and the coordinates of a point	I can find the equation of a line in the form $y = mx + c$ given the coordinates of two points.
Parallel lines	I can decide if two lines are parallel by comparing their gradients	I can decide if two lines are parallel by rearranging them into the form $y = mx + c$ and comparing their gradients	I can find the equation of a line parallel to another one, given the coordinates of a point.
Linear simultaneous equations	I can use the process of elimination to find the value of one variable	I can use the method of substitution to find the value of two variables in the equation	I can solve linear simultaneous equations graphically
Forming and solving simultaneous equations	I can translate a worded problem into equations with two variables	I can set up and solve linear simultaneous equations	I can interpret the solutions of linear simultaneous equations and give a final answer in context
Factorising quadratics $x^2 + bx + c$	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.
Factorising the difference of two squares	I can factorise expressions in the form $x^2 - p^2$	I can factorise expressions using common factor and a difference of two squares	I can use factorisation by difference of two squares to perform arithmetic calculations (e.g. $101^2 - 99^2$)
Factorising $ax^2 + bx + c$	I can split the middle term as two terms with a sum of bx and a product of acx^2	I can split the middle term and factorise in groups	I can factorise any quadratic expression.
Solving quadratic equations by factorisation	I can solve quadratic equations by factorising when the coefficient of x^2 is 1.	I can solve quadratic equations by factorising when the coefficient of x^2 is greater than 1.	I can solve quadratic equations by factorising that require rearrangement or expansion of brackets.

HT3: Algebra (cont)

Topic	Emerging	Achieving	Extending
The quadratic formula	I can use the quadratic formula when all coefficients are positive, giving answers in exact form or rounded.	I can use the quadratic formula when the coefficients are positive or negative, giving answers in exact form or rounded.	I can use the quadratic formula to solve a quadratic equation that requires rearrangement.
Plotting quadratic graphs	<i>I can plot simple quadratic graphs using a table of values.</i>	<i>I can plot quadratic graphs by completing a table of values.</i>	<i>I can recognise linear and quadratic graphs and match them to their equations.</i>
Features of quadratic graphs	I can read features of a quadratic graph: turning point, y-intercept, roots, line of symmetry	I can sketch a possible graph of a quadratic equation by identifying its roots, concavity and y-intercept.	I can write a possible equation of a quadratic graph given its roots and/or its y-intercept
Solving quadratic equations using graphs	I can use a quadratic graph to estimate solutions of the equation $x^2+bx+c=0$	I can draw a horizontal line and use a quadratic graph to estimate solutions of the equation $x^2+bx+c=d$	I can rearrange an equation in order to use the graph of a quadratic equation to estimate solutions.
Graphs of cubic, reciprocal and exponential equations	I can plot cubic, reciprocal and exponential graphs.	I can describe the features of linear, quadratic, cubic, reciprocal and exponential graphs and match them to equations.	I can find the equation of an exponential graph given two points.
Algebraic Fractions	I can simplify algebraic fractions by factorising and cancelling.	I can add, subtract, multiply and divide algebraic fractions .	I can solve equations with algebraic fractions.
Composite Functions	I can substitute an algebraic expression as the input of a function	I can write an expression for a composite function and simplify it	I can solve equations that involve composite functions
Inverse functions	I can find the inverse of a simple function by reversing operations	I can find the inverse of a function that requires algebraic manipulation (eg fraction with x in the denominator)	I can solve equations that involve inverse functions, including composite functions.

HT4: Geometry

Topic	Emerging	Achieving	Extending
Maps and scale drawings (2)	<i>I can use scale to work out a length by multiplying or dividing</i>	<i>I can measure a line on a map and use the scale to work out the real length.</i>	<i>I can use scale that requires to convert between units.</i>
Angles in parallel lines (1)	<i>I can recognise equal angles formed by parallel lines.</i>	<i>I can identify corresponding and alternate angles and use the associated rules</i>	<i>I can solve multi-step angle problems involving parallel lines and justify my reasoning.</i>
Bearings (3)	<i>I can measure and state bearings using three-figure notation.</i>	<i>I can solve problems involving bearings and parallel lines</i>	<i>I can solve multi-step problems involving bearings.</i>
Arcs and sectors (3)	<i>I can use a formula to calculate the area of a sector or the length of an arc.</i>	<i>I can rearrange arc and sector formulae to calculate a missing radius or angle.</i>	<i>I can calculate the perimeter of sector and solve worded problems involving sectors and arcs.</i>
Angles in triangles and quadrilaterals (1)	<i>I can remember the sum of interior angles of triangles and quadrilaterals.</i>	<i>I can find missing angles in triangles and quadrilaterals</i>	<i>I can work out and use angle rules in more complex problems, including exterior angles.</i>
Circle Theorems (4)	<i>I can recall and identify circle theorems from diagrams.</i>	<i>I can use circle theorems to calculate unknown angles.</i>	<i>I can solve multi-step problems involving circle theorems and justify my reasoning.</i>

How is your progress measured in class in Maths in Y10H Summer Term?

HT5: Geometry

Pythagoras' Theorem	<i>I can use and substitute into Pythagoras' theorem to find the hypotenuse.</i>	<i>I can use and substitute into Pythagoras' theorem and rearrange to find shorter sides</i>	<i>I can apply my knowledge of Pythagoras' theorem to problem solve.</i>
2D Trigonometry	I can use trig ratios (sine, cosine and tangent) to find missing angles in a right angled triangle.	I can use trig ratios (sine, cosine and tangent) to find missing lengths in a right angled triangle, including rearrangement.	I can use trigonometry along with Pythagoras to solve problems involving composite triangles.
Exact trig values	I can recall exact values for sine, cosine and tangent of special angles.	I can derive exact trig values from isosceles triangles and equilateral triangles.	I can apply exact trig values in geometrical problems.
Sine Rule	I can use the sine rule to calculate a missing length.	I can rearrange the sine rule to calculate a missing angle.	I can use the sine rule to solve complex problems.
Cosine rule	I can use the cosine rule to calculate a missing length.	I can rearrange the cosine rule to calculate a missing angle.	I can decide when to use the sine or cosine rules, and apply them to solve complex problems.
Area of a triangle $A = 0.5ab \sin C$	I can identify when to use the $0.5ab \sin C$ rule	I can use the area rule to calculate the area of any triangle.	I can rearrange the area rule to calculate missing angles and lengths when the area of a triangle is given.
Similar shapes (angles and lengths)	I can decide if two shapes are similar and identify missing angles.	I can use scale factors to calculate missing lengths in similar triangles	I can use scale factors to calculate missing lengths in similar triangles where there is a rotation or one triangle is inside the other.
Volume of prisms and cylinders	I can calculate the volume of a cube or cuboid.	I can calculate the volume of a prism or cylinder.	I can rearrange the formulae for volume of a prism or cylinder to find a missing length.
Surface area of prisms and cylinders	I can calculate the surface area of a cuboid.	I can calculate the surface area of a prism or cylinder.	I can solve problems involving surface area or volume (eg cost).
Volume and surface area of other shapes	I can use formulae to calculate the volume or surface area of a sphere, cone or pyramid.	I can rearrange the formulae to find a missing length in a sphere, cone or pyramid.	I can calculate volumes of composite solids made from cylinders, spheres, pyramids and cones.
Similar Shapes in 3D (LAV / LAM)	I can calculate the scale factors of length, area and volume of two similar shapes.	I can find missing lengths, areas, volumes or masses of similar shapes.	I can solve problems involving 3 similar shapes, including with ratio.

HT5/HT6: Probability and Statistics

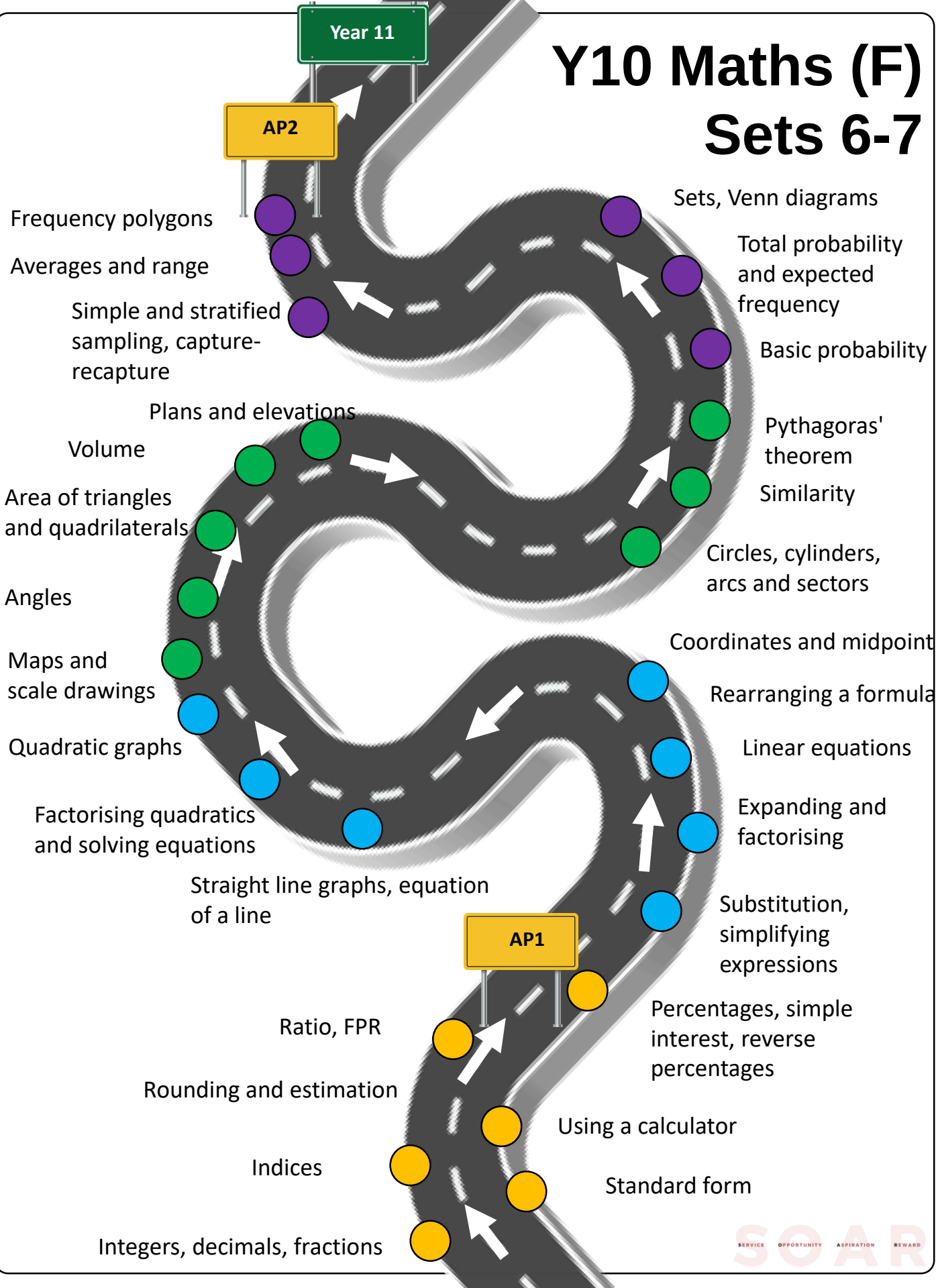
Topic	Emerging	Achieving	Extending
Tree diagrams (independent events)	I can write probabilities on a tree diagram as fractions, decimals or percentages	I can work out the probability of two combined events (and rule) from a tree diagram	I can calculate probabilities from a tree diagram (and/or rules)
Tree diagrams (dependent events)	I can explain the difference between independent and dependent events	I can complete a tree diagram for dependent events by changing the fractions	I can calculate probabilities of dependent events from a tree diagram (and/or rules), including algebraic expressions.
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>
Combined mean / reverse mean	I can work out a sum given the mean and the number of values.	I can work out the combined mean of two groups.	I can use reverse mean to work out a missing sum or mean when combining groups.
Averages from frequency tables	I can find the mode, range, mean and median from a frequency table	I can find the modal class, the interval that contains the median and calculate the estimated mean for grouped data	I can explain why it is not possible to know exactly what the median, mode and mean are if the data is grouped.
Quartiles and interquartile range	I can find the quartiles for listed data	I can work out the interquartile range for listed data	I can use quartiles and interquartile range to compare two distributions (central tendency and spread)
Boxplots	I can read the 5 key values from a boxplot	I can draw a boxplot accurately given the 5 key values	I can use boxplots to compare two distributions.
Frequency polygons	I can read a frequency polygon	I can draw a frequency polygon using the midpoint of each interval.	I can compare two distributions from their frequency polygons.
Cumulative frequency graphs	I can complete a cumulative frequency table	I can draw a cumulative frequency graph using the endpoint of each interval.	I can read information from a cumulative frequency graph (measures of location and spread, estimating a value)

Assessment Point 2

What is assessed?	% of course	Why?
Everything learnt up to this point	75%	To measure progress towards GCSE target grade and decide Y11 tier.

Y10 Maths (F)

Sets 6-7



How is your progress measured in class in Maths in Y10F Autumn Term?

HT1: Number

Topic	Emerging	Achieving	Extending
Ordering integers, decimals and fractions	<i>I can compare and order integers.</i>	<i>I can compare and order decimals.</i>	<i>I can compare and order fractions by converting them to the same denominator.</i>
4 operations with negative integers	<i>I can use the rules of negatives to add, subtract, multiply and divide.</i>	<i>I can calculate with negative numbers and brackets, and follow the order of operations.</i>	<i>I can solve problems with negative numbers.</i>
4 operations with decimals	<i>I can add and subtract with decimals.</i>	<i>I can multiply decimals and divide a decimal by an integer.</i>	<i>I can divide by a decimal.</i>
4 operations with fractions	<i>I can calculate with proper fractions.</i>	<i>I can calculate with improper fractions.</i>	<i>I can solve worded problems with fractions (proper and improper)</i>
Powers and roots	<i>I can calculate the square or cube of a number</i>	<i>I can calculate the square root or cube root of a number.</i>	<i>I can calculate further powers or roots of a number.</i>
Reciprocals and negative indices	<i>I can write the reciprocal of a number as $1/\text{number}$ and simplify</i>	<i>I can evaluate negative indices when the base is an integer</i>	<i>I can evaluate negative indices when the base is fractional.</i>
Writing in standard Form	<i>I can convert between ordinary numbers and standard form for positive powers of 10.</i>	<i>I can convert between ordinary numbers and standard form with negative powers of 10.</i>	<i>I can order and compare numbers in ordinary and standard form.</i>
Multiplying and dividing with standard form	<i>I can multiply and divide numbers written in standard form with a calculator.</i>	<i>I can multiply and divide numbers in standard form without a calculator.</i>	<i>I can solve worded problems that require multiplication or division or numbers in standard form.</i>
Using a calculator	<i>I can use a calculator effectively in a simple calculation and write my answer in a required format.</i>	<i>I can use a calculator effectively in a complex calculation with powers, roots and fractions.</i>	<i>I can use a calculator to effectively in a complex calculation with trigonometric ratios or surds.</i>
Rounding	<i>I can round a number to 1, 10, 100, 1000, etc.</i>	<i>I can round a number to the required decimal places.</i>	<i>I can round a number to the required significant figures.</i>
Estimation	<i>I can round numbers to 1 sf to estimate a calculation.</i>	<i>I can round numbers to 1 sf or 2sf to estimate a calculation, including worded problems.</i>	<i>I can decide if my estimate is an overestimate or an underestimate and explain why.</i>
Estimate powers and roots	<i>I can identify square numbers, cube numbers and their roots.</i>	<i>I can estimate the value of powers and roots using known facts.</i>	<i>I can estimate and compare powers and roots, justifying the accuracy of my estimates.</i>

HT2: Ratio and proportion

Topic	Emerging	Achieving	Extending
Converting between percent ages, decimals and fractions	<i>I can convert a decimal to a fraction and simplify it</i>	<i>I can convert a fraction to a decimal when the denominator is a power of 10</i>	<i>I can convert a fraction to a decimal by division or equivalent fractions</i>
Forming and simplifying ratio	<i>I can form a ratio from a simple context or diagram.</i>	<i>I can form and simplify a ratio.</i>	<i>I can form and simplify a ratio that requires converting units.</i>
Dividing in a ratio	<i>I can share a total amount into two or three parts using a given ratio</i>	<i>I can solve ratio problems when I know one part, or the difference between two parts.</i>	<i>I can solve worded problems that involve dividing in a ratio.</i>
FPR problems	I can solve problems that involve two of fractions, percentages or ratio.	I can solve simple problems that combine fractions, ratios and percentages.	I can solve harder problems that combine fractions, ratios and percentages.
Writing a number as a percentage of another	<i>I can express a number as a fraction of another.</i>	<i>I can express a number as a percentage of another with a calculator.</i>	<i>I can express a number as a percentage of another without a calculator.</i>
Increasing and decreasing by a percentage	<i>I can find the multiplier to increase or decrease by a percentage</i>	<i>I can calculate percentage increase/decrease using multipliers</i>	<i>I can solve multi-step percentage problems using multipliers.</i>
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.
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.

Assessment Point 1

What is assessed?	% of course	Why?
Content learnt up to this point in the year.	50%	To measure progress towards GCSE target grade.

How is your progress measured in class in Maths in Y10F Spring Term?

HT3: Algebra

Topic	Emerging	Achieving	Extending
Substitution	<i>I can substitute a positive number into an expression.</i>	<i>I can substitute a negative number into an expression.</i>	<i>I can substitute more than one number into an expression.</i>
Simplifying expressions	<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>
Laws of indices	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
Expanding single brackets	<i>I can multiply a single bracket by a single factor</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>
Factorising into a single bracket	I can factorise expressions by taking out a common factor.	I can factorise expressions by taking out a variable.	I can factorise expressions by taking out multiple variables
Expanding double brackets	I can expand a product of two simple binomials: $(x \pm a)(x \pm b)$ and collect.	I can expand products of any two binomials $(ax+b)(cx+d)$ and collect.	I can expand products of any two binomials $(ax \pm b)(cx \pm d)$ and collect.
Solving linear equations	<i>I can solve two-step equations.</i>	<i>I can solve equations including brackets</i>	<i>I can solve equations with x on both sides.</i>
Forming and solving linear equations	<i>I can form an equation involving a worded scenario or geometric problem.</i>	<i>I can form and solve an equation from a worded or geometric problem.</i>	<i>I can interpret the solution in the context of a problem and give the answer required.</i>
Rearranging a formula	I can rearrange a formula with one operation.	I can rearrange a formula with two operations.	I can confidently rearrange complex formulae.
Coordinates	<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>
Midpoint	<i>I can find the midpoint of two points with a grid.</i>	<i>I can find the midpoint of two points without a grid.</i>	<i>I can find a point if I know another point and their midpoint.</i>

HT3: Algebra (cont)

Topic	Emerging	Achieving	Extending
Plotting straight line graphs (2)	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.
Equation Of a Line (2)	<i>I can read the gradient and y-intercept of a line from a formula, even if it needs rearranging.</i>	<i>I can identify the gradient and y-intercept of a line from its graph.</i>	<i>I can match graphs of lines and their equations, including horizontal and vertical lines.</i>
Factorising quadratics x^2+bx+c (3)	I can find two numbers if their sum is b and their product is c.	I can factorise quadratics of the form x^2+bx+c .	I can factorise quadratics of the form $x^2\pm bx\pm c$
Factorising the difference of two squares (1)	I can factorise expressions in the form $x^2 - a^2$	I can factorise expressions in the form $a^2x^2 - b^2y^2$	I can factorise expressions using common factor and a difference of two squares (eg $ax^2 - ay^2$)
Solving quadratic equations by factorisation (1)	I can solve quadratic equations when they are already factorised	I can solve quadratic equations by factorising first.	I can solve quadratic equations by factorising that require rearrangement.
Linear simultaneous equations (3)	I can use the process of elimination to find the value of one variable	I can use the method of substitution to find the value of two variables in the equation	I can solve linear simultaneous equations graphically
Forming and solving simultaneous equations (2)	I can translate a worded problem into equations with two variables	I can set up and solve linear simultaneous equations	I can interpret the solutions of linear simultaneous equations and give a final answer in context
Solving quadratic equations by factorisation (2)	I can solve quadratic equations by factorising when the coefficient of x^2 is 1.	I can solve quadratic equations by factorising when the coefficient of x^2 is greater than 1.	I can solve quadratic equations by factorising that require rearrangement or expansion of brackets.
Plotting quadratic graphs (1)	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.
Features of quadratic graphs (1)	I can read features of a quadratic graph: turning point, y-intercept, roots.	I can sketch a possible graph of a quadratic equation by identifying its roots, concavity and y-intercept.	I can write a possible equation of a quadratic graph given its roots and concavity.
Solving quadratic equations using graphs (1)	I can use a quadratic graph to estimate solutions of the equation $x^2+bx+c=0$	I can draw a horizontal line and use a quadratic graph to estimate solutions of the equation $x^2+bx+c=d$	I can rearrange an equation in order to use the graph of a quadratic equation to estimate solutions.

HT4: Geometry

Topic	Emerging	Achieving	Extending
Maps and scale drawings	<i>I can use scale to work out a length by multiplying or dividing</i>	<i>I can measure a line on a map and use the scale to work out the real length.</i>	<i>I can use scale that requires to convert between units.</i>
Angles around a point, on a straight line, vertically opposite	<i>I can recognise the angle rules.</i>	<i>I can find missing angles using angle rules</i>	<i>I can solve harder angle problems and give reasons.</i>
Angles in parallel lines	<i>I can recognise equal angles formed by parallel lines.</i>	<i>I can identify corresponding and alternate angles and use the associated rules</i>	<i>I can solve multi-step angle problems involving parallel lines and justify my reasoning.</i>
Angles in triangles and quadrilaterals	<i>I can recall the formulae for the sum of interior angles in triangles and quadrilaterals.</i>	<i>I can find missing interior angles of triangles or quadrilaterals.</i>	<i>I can find missing interior or exterior angles of triangles and quadrilaterals.</i>
Interior and exterior angles in any polygon	<i>I can calculate the sum of interior angles in polygons using the formula and find missing angles in irregular polygons.</i>	<i>I can calculate the sum of interior angles in regular polygons and use it to find exterior ones and problem solve.</i>	<i>I can problem solve using interior angles in regular polygons to find missing angles.</i>
Interior and exterior angles in a regular polygon	<i>I can calculate the exterior angle of any regular polygon.</i>	<i>I can calculate the number of sides given the exterior angle</i>	<i>I can problem solve with interior and exterior angles.</i>
Units of area	<i>I can convert from m^2 to cm^2, or cm^2 to mm^2</i>	<i>I can convert from mm^2 to cm^2 or cm^2 to m^2</i>	<i>I can solve area problems by converting to the same unit</i>
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>
Area of a parallelogram	<i>I can identify the perpendicular height of a parallelogram.</i>	<i>I can calculate the area of a parallelogram.</i>	<i>I can solve problems involving area of parallelograms including finding missing lengths when the area is given.</i>
Area of a trapezium	<i>I can identify the bases and perpendicular height of a trapezium.</i>	<i>I can calculate the area of a trapezium.</i>	<i>I can solve problems involving area of trapezia, including finding missing lengths when the area is given.</i>

HT4: Geometry (cont)

Topic	Emerging	Achieving	Extending
Properties of 3D shapes	<i>I can identify common 3D shapes and say how many faces they have</i>	<i>I can identify how many faces, vertices and edges 3D shapes have</i>	<i>I can solve problems using properties of 3D shapes, including finding unknown values and reasoning about structures.</i>
Units of volume	<i>I can convert from m^3 to cm^3, or cm^3 to mm^3</i>	<i>I can convert from mm^3 to cm^3 or cm^3 to m^3</i>	<i>I can solve volume problems by converting to the same unit</i>
Volume of a cuboid	<i>I can calculate the volume of a cuboid by counting cubes.</i>	<i>I can use formulae to calculate the volume of a cuboid.</i>	<i>I can solve problems involving volume, including cost or finding missing dimensions.</i>
Volume of a prism	<i>I can decide if a 3D shape is a prism and identify its cross section.</i>	<i>I can use formulae to calculate the volume of a prism.</i>	<i>I can solve problems involving volume, including cost or finding missing dimensions.</i>

How is your progress measured in class in Maths in Y10F Summer Term?

HT5: Geometry

Plans and elevations	I can identify plans and elevations of simple 3D shapes.	I can draw and interpret accurate plans and elevations.	I can sketch a 3D shape given its plan and elevations, or work out a volume given these.
Circle definitions	<i>I can identify parts of a circle such as radius, diameter, chord and tangent.</i>	<i>I can draw circles accurately with a compass and identify key features.</i>	<i>I can draw and describe a radius, diameter, chord, tangent, sector and segment.</i>
Circumference and area of a circle	<i>I can find the circumference or area of a circle given the radius or diameter.</i>	<i>I can calculate the perimeter and area of composite shapes involving circles.</i>	<i>I can rearrange the formula to find the radius or diameter of a circle given its circumference or area.</i>
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.
Arcs and sectors	I can use a formula to calculate the area of a sector or the length of an arc.	I can rearrange arc and sector formulae to calculate a missing radius or angle.	I can calculate the perimeter of sector and solve worded problems involving sectors and arcs.
Area of composite shapes, including circles	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 sections of circles.
Similar shapes (angles and lengths)	I can decide if two shapes are similar and identify missing angles.	I can use scale factors to calculate missing lengths in similar triangles	I can use scale factors to calculate missing lengths in similar triangles where there is a rotation or one triangle is inside the other.
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.

HT5/HT6: Probability and Statistics

Topic	Emerging	Achieving	Extending
Tally charts and frequency tables	<i>I can complete a tally chart.</i>	<i>I can complete a frequency table from a tally chart.</i>	<i>I can interpret values from a frequency table.</i>
Frequency trees	I can complete frequency trees.	I can read frequency trees.	I can draw frequency trees and use them to find a missing frequency.
Probability scale, theoretical probability	<i>I can use the language of impossible, certain, even, likely, unlikely.</i>	<i>I can locate a probability on a scale.</i>	<i>I can calculate theoretical probability using counts, and place it on a scale.</i>
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>I can set up and solve an equation involving probabilities on a table.</i>
Expected frequency	<i>I can use a probability to calculate an expected frequency over a given number of trials</i>	<i>I can use expected frequency to find the probability of an event</i>	<i>I can compare expected and actual frequencies to comment on bias</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
Simple and stratified sampling	I can describe how to collect a simple random sample.	I can calculate sample sizes in a stratified sampling.	I can explain why sample sizes are only estimate.
Capture-recapture	I can write a fraction in a capture-recapture problem.	I can write both fractions in a capture-recapture problem.	I can set up an equation and solve a capture-recapture problem.
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>
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
Averages from frequency tables	I can find the mode, range, mean and median from a frequency table	I can find the modal class, the interval that contains the median and calculate the estimated mean for grouped data	I can explain why it is not possible to know exactly what the median, mode and mean are if the data is grouped.
Frequency polygons	I can read a frequency polygon	I can draw a frequency polygon using the midpoint of each interval.	I can compare two distributions from their frequency polygons.

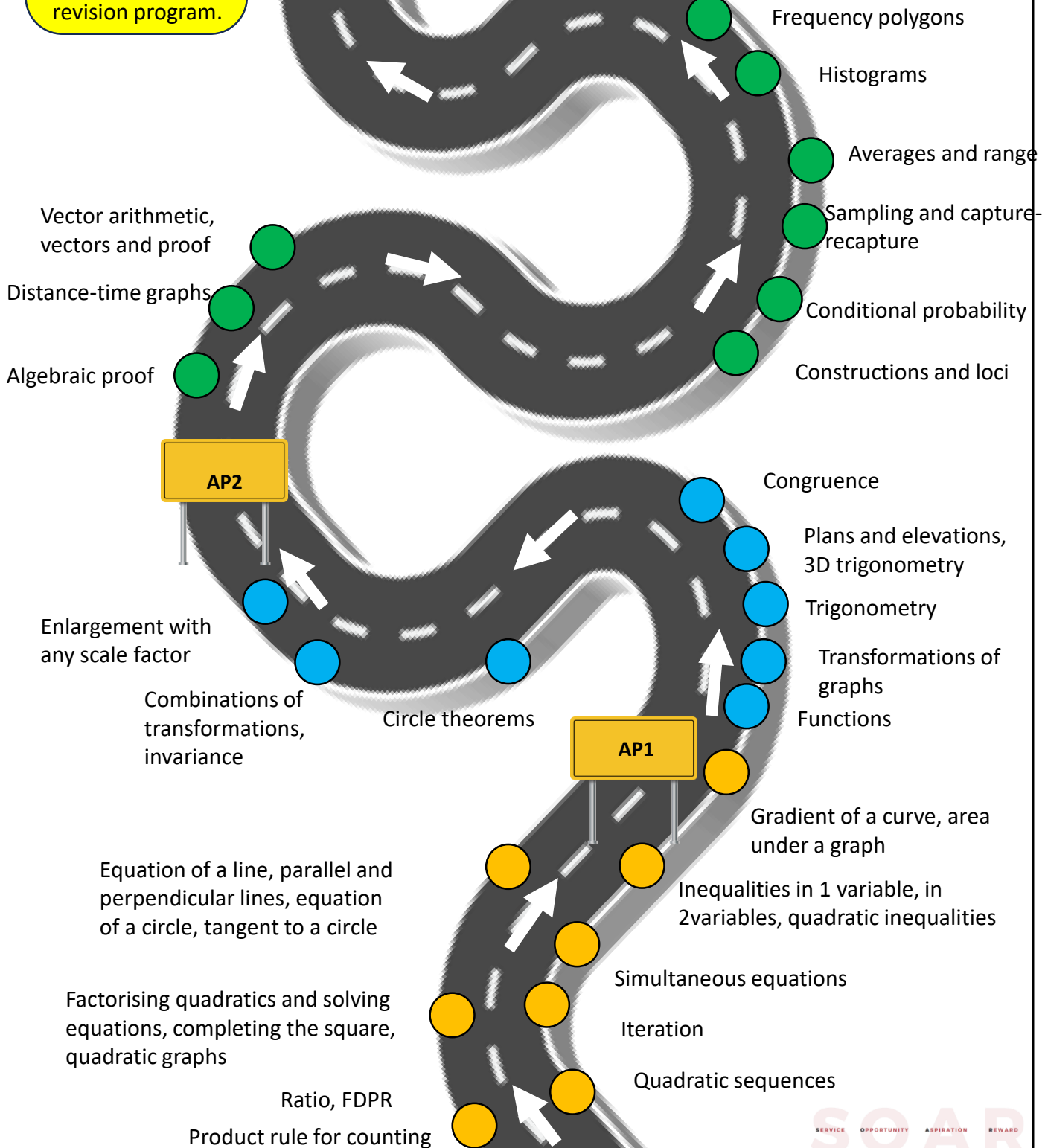
Assessment Point 2

What is assessed?	% of course	Why?
Everything learnt up to this point	70%	To measure progress towards GCSE target grade and decide Y11 class.

GCSE EXAMS

Y11 Higher 1 Maths (Sets 1-2)

These are the topics covered during class. Additional topics are reviewed through a separate weekly revision program.



Year 11H1 Content

MATHS: Autumn Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
07.09.26	W1: Product rule for counting, dividing in a ratio, FDPR problems	W0: Using a calculator, estimation, standard form W1: Simplifying ratio, sequences, nth term
14.09.26	W2: Hard ratio, quadratic sequences	W2: Rounding and truncating, error intervals, bounds, prime factorisation, HCF, LCM
21.09.26	W3: Iterative processes, iteration	W3: 4 operations with decimals, 4 operations with fractions, fraction of an amount, recurring decimals
28.09.26	W4: Factorising ax^2+bx+c , factorising the difference of two squares, solving equations by factorisation and the quadratic formula, quadratic graphs and features	W4: Index laws, expanding brackets (single, double, triple), taking out common factors, factorising x^2+bx+c
05.10.26	W5: Completing the square, turning points, linear simultaneous equations	W5: Percentage of an amount, increasing and decreasing by a percentage, percentage change/profit, reverse percentages
12.10.26	W6: Quadratic simultaneous equations, inequalities on a number line, solving linear inequalities	W6: Simple interest, compound interest and depreciation
Half Term		
02.11.26	W7: Quadratic inequalities, equation of a line	W7: Reciprocals, negative and fractional indices, surds
09.11.26	W8: Linear inequalities with two variables (regions), equations of parallel and perpendicular lines	W8: Forming and solving linear equations, rearranging a formula
16.11.26	W9: Equation of a circle, tangent to a circle, gradient of a curve at a point	W9: Venn diagrams, tree diagrams
23.11.26	W10: Area under a graph	W10: Stem-and-leaf diagrams, quartiles and IQR, boxplots, scatter graphs
30.11.26 AP1		
07.12.26	DIRT week	W11: Total probability, expected frequency, two-way tables
14.12.26	W12: Graphs of cubic, reciprocal, exponential and trigonometric equations, exact trig values	W12: Area of a triangle, parallelogram, trapezium, composite shapes
Christmas Holidays		

Year 11H1 Content

MATHS: Spring Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
04.01.27	W13: Functions, composite, inverse, transformation of graphs	W13: Pythagoras and trigonometry in 2D, circumference and area of a circle, arcs and sectors
11.01.27	W14: Sine rule, cosine rule, area rule, plans and elevations	W14: Similar shapes (lengths and angles, LAV), units of area and volume
18.01.27	W15: Pythagoras and trigonometry in 3D, criteria for congruent triangles, circle theorems	W15: Algebraic fractions
25.01.27	W16: Proof of circle theorems, rotations, translations, reflections with invariance, enlargement with a positive scale factor	W16: Recipes, best value, exchange rates, direct and inverse proportion (numeric, algebraic, graphs)
01.02.27	W17: Enlargement with a negative scale factor	W17: Speed, density, pressure, rate of flow
08.02.27 AP2		
Half Term		
22.02.27 AP2		
01.03.27	DIRT week	W18: Bar charts, pie charts, cumulative frequency diagrams
08.03.27	W19: Algebraic proof, distance-time graphs, kinematic graphs	W19: Midpoint, dividing a line segment into a ratio, plotting straight line graphs, real life linear graphs
15.03.27	W20: Column vectors, diagrams and arithmetic, vectors and proof	W20: Angles in triangles and quadrilaterals, angles in polygons
22.03.27	W21: Harder vectors and proof, constructions, loci	W21: Angles between parallel lines, bearings, maps and scale drawings
Easter Holidays		

Year 11H1 Content

MATHS: Summer Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
12.04.27	W22: Conditional probability (two-way-tables, Venn diagrams, tree diagrams), simple and stratified sampling, capture-recapture	W22: Volume and surface area of cuboids, prisms, cylinders, spheres, pyramids, cones and composite solids
19.04.27	W23: Averages from frequency tables, histograms, frequency polygons	W23: Averages and range, reverse mean
26.04.27		W24: Solving quadratic equations graphically, conversion graphs, ratio graphs
04.05.27	Public exams	
10.05.27	Public exams	
17.05.27	Public exams	
24.05.27	Public exams	
Half Term		
07.06.27	Public exams	
14.06.27	Public exams	
21.06.27	Public exams	

GCSE EXAMS

Y11 Higher 2 Maths (Sets 3-5)

These are the topics covered during class. Additional topics are reviewed through a separate weekly revision program.

Transformation of graphs

Functions

Cumulative frequency graphs

Histograms

Frequency polygons

AP2

Similarity

Circle theorems

Arcs and sectors

Quadratic graphs

Compound interest and depreciation, reverse percentages

Indices and surds

Rounding, truncation, error intervals and bounds

Product rule for counting

Graphs of cubic, reciprocal and exponential functions

Gradient of a curve, area under a graph

Algebraic fractions

Tree diagrams, Venn diagrams

Averages and range

Simple and stratified sampling, capture-recapture

Volume and surface area

Pythagoras and trigonometry

Equation of a circle

Equation of a line, parallel and perpendicular lines

Simultaneous equations
Inequalities

Factorising quadratics, solving quadratic equations

Iteration

Linear and quadratic sequences

Standard form

Decimals and fractions

AP1

Year 11H2 Content

MATHS: Autumn Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
07.09.26	W1: Product rule for counting, calculations with decimals, standard form	W1: 4 operations with negative integers, prime factorisation, HCF, LCM, laws of indices
14.09.26	W2: Calculations with fractions, recurring decimals	W2: Estimation including powers and roots, using a calculator
21.09.26	W3: Rounding and truncating, error intervals, bounds	W3: Fraction of an amount, percentage of an amount, increasing and decreasing by a percentage
28.09.26	W4: Reciprocals, negative and fractional indices, surds	W4: Percentage change, simple interest
05.10.26	W5: Compound interest and depreciation, reverse percentages	W5: Expanding single, double and triple brackets and collecting
12.10.26	W6: General sequences, nth term of linear sequences, quadratic sequences	W6: Substitution, rearranging a formula, taking out a common factor
Half Term		
02.11.26	W7: Iterative processes and iteration, factorising x^2+bx+c	W7: Solving linear equations, forming and solving equations
09.11.26	W8: Factorising quadratics ax^2+bx+c , factorising the difference of two squares, solving quadratic equations by factorisation, the quadratic formula	W8: Coordinates and midpoint, plotting straight-line graphs including vertical and horizontal
16.11.26	W9: Quadratic graphs and features, linear simultaneous equations, inequalities on a number line, solving linear inequalities	W9: Simplifying a ratio, dividing in a ratio, FDP problems
23.11.26	Revision	W10: Quartiles and IQR, box plots, stem-and-leaf diagrams, scatter graphs
30.11.26 AP1		
07.12.26	DIRT week	W11: Vertically opposite angles, angles on a straight line, between parallel lines, in triangles and quadrilaterals
14.12.26	W12: Equation of a line, equation through points, parallel lines, perpendicular lines, equation of a circle	W12: Total probability, expected frequency, two-way tables
Christmas Holidays		

Year 11H2 Content

MATHS: Spring Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
04.01.27	W13: Pythagoras and trigonometry in 2D, exact trig values	W13: Recipes, best value, exchange rates
11.01.27	W14: Sine rule, cosine rule, area rule (Sets 3-4) Surface area and volume of spheres, pyramids and cones (Set 5)	W14: Circumference and area of a circle, units of area and volume, volume of cubes, cuboids, prisms and cylinders
18.01.27	W15: Arc length, sector area, circle theorems	W15: Speed, density, pressure
25.01.27	W16: Similar shapes (angles and lengths, LAV)	W16: Direct and inverse proportion (numeric, algebraic, graphs), conversion graphs
01.02.27	Revision	W17: Column vectors (diagrams and arithmetic)
08.02.27 AP2		
Half Term		
22.02.27 AP2		
01.03.27	DIRT week	W18: Translations, reflections, rotations, combinations and invariance
08.03.27	W19: Frequency polygons, histograms	W19: Enlargements with natural and fractional scale factor, maps and scale drawings
15.03.27	W20: Cumulative frequency graphs, simple and stratified sampling, capture-recapture, averages and range	W20: Area of rectangles and triangles, area of a parallelogram, trapezium and composite shapes
22.03.27	W21: Averages from a table, tree diagrams, Venn diagrams	W21: Reverse mean, bar charts
Easter Holidays		

Year 11H2 Content

MATHS: Summer Term

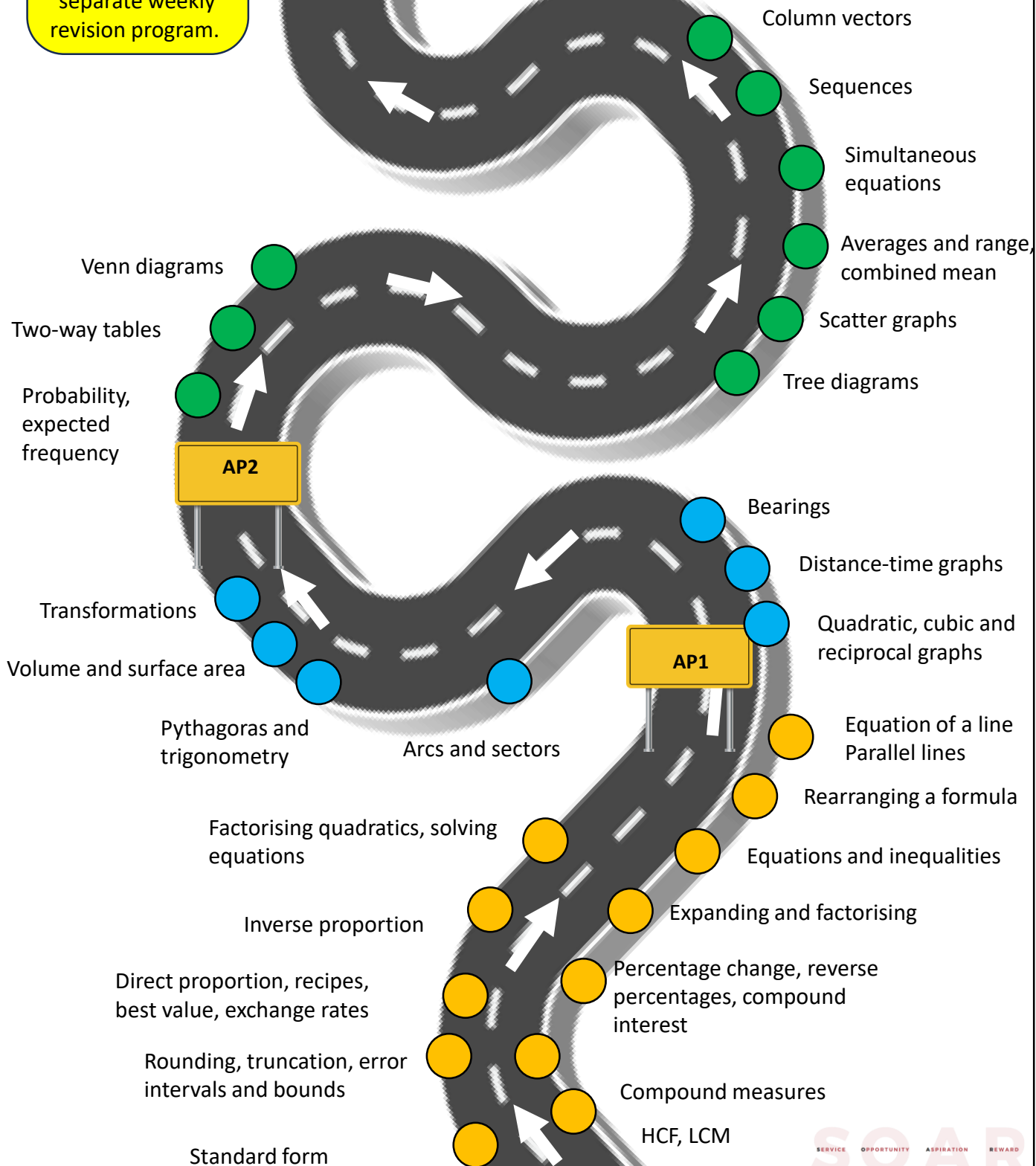


Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
12.04.27	W22: Algebraic fractions, gradient of a curve at a point	W22: Constructions, pie charts
19.04.27	W23: Area under a graph, real life linear graphs, graphs of reciprocal, exponential, cubic	W23: Plans and elevations, surface area of prisms and cylinders
26.04.27	W24: Functions, composite inverse, transformation of graphs	W24: Angles in polygons
04.05.27	Revision and Public exams	Public exams
10.05.27	Public exams	
17.05.27	Public exams	
24.05.27	Public exams	
Half Term		
07.06.27	Public exams	
14.06.27	Public exams	
21.06.27	Public exams	

GCSE EXAMS

Y11 Foundation Maths (Sets 6-7)

These are the topics covered during class. Additional topics are reviewed through a separate weekly revision program.



Year 11F Content

MATHS: Autumn Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
07.09.26	W1: HCF and LCM, laws of indices, converting between standard form and ordinary numbers	W1: Factors, prime numbers, prime factorisation, multiples
14.09.26	W2: Calculations with standard form, rounding, truncation	W2: Four operations with fractions, expanding single brackets
21.09.26	W3: Upper and lower bounds, error intervals, direct proportion (numeric), recipes	W3: Powers and roots, reciprocals and negative indices, order of operations
28.09.26	W4: Best value, exchange rates, speed, density	W4: Estimation, using a calculator, dividing in a ratio
05.10.26	W5: Inverse proportion (numeric), reverse percentages, percentage change, compound interest and depreciation	W5: Percentage of an amount, increasing and decreasing by a percentage, simple interest
12.10.26	W6: Expanding double brackets, taking out a common factor, factorising x^2+bx+c , factorising the difference of two squares, solving equations by factorising	W6: Substitution, solving linear equations
Half Term		
02.11.26	W7: Forming and solving linear equations, inequalities on a number line, solving linear inequalities	W7: Coordinates and midpoint
09.11.26	W8: Rearranging a formula, plotting straight line graphs including vertical and horizontal	W8: General sequences, FDPR problems
16.11.26	W9: Gradient of a line, equation of a line, parallel lines	W9: Angles at a point, vertically opposite, on a straight line, angles in a triangle
23.11.26	Revision	W10: Angles in a quadrilateral, angles between parallel lines
30.11.26 AP1		
07.12.26	DIRT week	W11: Angles in irregular and regular polygons
14.12.26	W12: Quadratic graphs and features, cubic graphs, reciprocal graphs, distance-time graphs	W12: Converting units of length, area, volume, mass, capacity, maps and scale drawings
Christmas Holidays		

Year 11F Content

MATHS: Spring Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
04.01.27	W13: Bearings, arc length, sector area	W13: Four operations with decimals, area of rectangles and triangles
11.01.27	W14: Pythagoras, trigonometry, exact trig values	W14: Area of parallelograms and trapezia, circumference and area of a circle
18.01.27	W15: Volume and surface area of spheres, pyramids and cones	W15: Volume and surface area of a cuboid, prism and cylinder
25.01.27	W16: Translations, reflections, rotations, enlargement with positive integer and fractional scale factor	W16: Probability scale, theoretical probability, area of composite shapes
01.02.27	Revision	W17: Plans and elevations, similar shapes (lengths and angles)
08.02.27 AP2		
Half Term		
22.02.27 AP2		
01.03.27	DIRT week	DIRT week
08.03.27	W18: Total probability, expected frequency, probability from two-way tables and Venn diagrams	W18: Systematic listing, frequency trees, Venn diagrams
15.03.27	W19: Probability trees for independent and dependent events	W19: Averages and range, stem-and-leaf diagrams
22.03.27	W20: Scatter graphs, averages from a table, combined mean	W20: Bar charts, line graphs, pictorams, frequency polygons
Easter Holiday		

Year 11F Content

MATHS: Summer Term



Date	Task A) Topics learnt this week	Task B) Topics you need to revise independently
12.04.27	W21: Linear simultaneous equations (algebraic and graphical)	W21: Pie charts, capture-recapture
19.04.27	W22: nth term of linear sequences, column vectors (diagrams and arithmetic)	W23: Constructions, simple and stratified sampling
26.04.27	Revision	
04.05.27	Public exams	
10.05.27	Public exams	
17.05.27	Public exams	
24.05.27	Public exams	
Half Term		
07.06.27	Public exams	
14.06.27	Public exams	
21.06.27	Public exams	

How is your attainment measured at GCSE in Autumn term?

Autumn: HT1/HT2

Content:	• Content learnt in lessons • Content revised independently on DrFrost
Home learning:	• 2 tasks per week on DrFrost • Teacher gives whole-class feedback every two weeks
Assessments:	• One test after school, every two weeks • Marked by your teacher • These will test the content learnt/revised over the previous weeks

Assessment Point 1

What is assessed?	% of course	Why?
3 x GCSE papers	80%	To assess progress towards GCSE target, decide interventions and finalise GCSE tier.

How is your attainment measured at GCSE in Spring term?

Spring: HT3/HT4	
Content:	• Content learnt in lessons • Content revised independently on DrFrost
Home learning:	• 2 tasks per week on DrFrost • Teacher gives whole-class feedback every two weeks
Assessments:	• One test after school, every two weeks • Marked by your teacher • These will test the content learnt/revised over the previous weeks

Assessment Point 2		
What is assessed?	% of course	Why?
3 x GCSE papers	90%	To assess progress towards GCSE target, continue interventions and predict GCSE grade.