Student Knowledge and Skills Tracker for KS4

At the end of each term, enter red-amber-green in the boxes for the work from the last term. You should go back and re-rate last terms work also, using the extra columns.
Red for poor understanding. Amber for some understanding. Green for good understanding.

Foundation only / Higher only	Year 9 topics	Revised?
	Chapter 2 Expressions	
	I can understand the words expression, term, equation, and formula	
	I can use algebraic notation e.g. write instructions like multiply 2 by x as 2x	
	I can substitute numbers into expressions	
	I can change worded problems into algebra, then use the formula. E.g, A car hire company charges £100 plus £30 per day. Write a formula for the cost of hiring.	
	I can simplify expressions by collecting the like terms	
	I can simplify expressions involving products and using the laws of indices e.g. $a^2 \times a^3$	
	I can expand brackets like 3(x+4) = 3x+12	
	I can expand and simplify expressions with more than one bracket eg 3(2x+3) + 2(5x+4)	
	I can factorise expressions like 15x+25 = 5(3x+5)	
	I can simplify algebraic expressions like $\frac{x+4}{6} + \frac{2x-1}{5}$	
	Chapter 4: Data Handling	
	I can understand sampling methods like random sampling	
	I can give advantages and disadvantages of different types of sampling methods and I understand bias	
	I can calculate the numbers for a stratified sample	
	I can organise data into frequency tables and stem and leaf diagrams	
	I can organise data into a back-to-back stem and leaf diagram	
	I can draw two-way tables and use them to solve problems	
	I can organise data into pictogram, bar charts and vertical line graphs	
	I can organise data into pie charts	
	I can find the mean, median, mode and range of data and give advantages and disadvantages of each	
	I can find the mean of combined data sets	
	I can find the mean, median, mode and range from a frequency table and compare data sets	
	I can work out the inter-quartile range (IQR)	

Foundationonly | Higher only

Year 10 - Term 1	Check		
	Aut term	Spr Term	Sum Term
Chapter 1 Calculations			
I can understand place value and can write numbers in words and figures			
I can use place value and use facts like 15x14=210 to find 2.10÷1.5 without a calculator			
I can put lists of whole numbers and decimals in order			
I can read scales			
I can use < and > properly			
I can round numbers I can nearest 10,100, 1000.			
I can round numbers to 1,2 and 3 decimal places and significant figures.			
I can multiply and divide by 10, 100, 1000			
I can add and subtract numbers, including negative numbers using mental and written methods.			
I can multiply and divide numbers, including negative numbers using mental and written methods.			
I can use negative numbers in real life contexts			
I can do a calculation in the correct order using BIDMAS			
Chapter 5 Fractions, Decimals and Percentages			
I can put a list of fractions in order			
I can find equivalent fractions, simplify a fraction, find a reciprocal of a fraction			
I can find fractions and percentages of amounts			
I can change a mixed number into an improper (top heavy) fraction and back again			
I can do calculations on fractions involving + - x and ÷ (including using mixed numbers)			
I can convert between fractions, decimals and fractions			
I can order fractions, decimals, and percentages			
I can understand recurring decimals and use dot notation to write them.			
I can prove $0.4\dot{9} = \frac{1}{2}$ using algebra.			
Chapter 3: Angles and Polygons			
I know the properties of special types of triangles and quadrilaterals, and of parallel and perpendicular lines			
I can understand and use angle facts about angles at a point and on a straight line			
I can find angles in parallel lines and use key words like alternate or corresponding			
I can understand and use bearings			
I can understand and use angle facts about angles in special triangles and quadrilaterals			
I can decide when shapes are congruent and prove it and use schemes of congruence for triangles like Side-Angle-Side (SAS)			
I can understand similar shapes and calculate missing sides in similar shapes and find the scale factor			
I can understand symmetry, both line and rotational and can name polygons			
I can find the sum of internal and external angles in polygons and find missing angles in polygons			

Foundationonly	Higher only	Year 10 - Term 2	Check		
			Aut term	Spr Term	Sum Term
Chapter 6 Formula and Functions					
I can substitute numbers into formulae					
I can write formulae from a worded problem					
I can rearrange formulae/change the subject of a formula					
I can rearrange harder equations where the subject (x) appears twice					
I can understand and identify expressions, terms, factors, inequalities, equations, identities, formulae and functions					
I can expand double brackets (multiplying out brackets)					
I can expand three of more brackets					
I can factorise expressions into double brackets					
I can factorise the difference of two squares					
I can simplify algebraic fractions by factorising					
I can prove statements in algebra and disprove statements by counter-example					
I can understand function notation f(x)					
I can work with composite functions fg(x) and find the inverse $f^{-1}(x)$ of a function					
Chapter 7 Working in 2D					
I can use standard metric units of measure for length					
I can use coordinates and solve problems on the coordinate axes					
I can measure lines and angles					
I can use bearings					
I can interpret maps and scale drawings					
I can recognise 2D shapes, find symmetries in 2D shapes and find a perimeter					
I can calculate areas of 2D shapes, including rectangles, triangles, parallelograms and trapeziums, and compound shapes					
I can transform shapes by rotation, translation and reflection and use a column vector to describe a translation					
I can transform shapes by enlargement for integer and fractional scale factors, and find the scale factor					
I can complete harder enlargements which use negative scale factors (e.g. enlarge by a scale factor -1.5)					
I can identify what changes and what is invariant under a combination of transformations					
Chapter 9 Measures and Accuracy					
I can round numbers and measure to an appropriate degree of accuracy					
I can estimate the answer to calculations by rounding the numbers to ones which are easier to work with					
I can solve money problems					
I can use my calculator accurately					
I can use standard units of length, mass, volume, capacity, time, and area					
I can use compound measures, like speed and density					
I can give the upper and lower bounds of numbers and complete calculations involving the upper and lower bound					
I can use inequality notation to state error intervals					

Foundationonly	Higher only	Year 10 - Term 3	Check		
			Aut term	Spr Term	Sum Term
Year 10 Revision & Assessment weeks					
Chapter 13 Factors, Powers and Roots.					
I understand factors, primes and multiples					
I can express a number as a product of prime factors					
I can find the highest common factor (HCF) and lowest common multiple (LCM) of pairs of numbers					
I can use the prime factors to find the HCF and LCM, and write the HCF and LCM using powers					
I can understand powers of numbers like cube and square and their roots, and understand index form like $3^4=3x3x3x3$					
I can understand the rules of indices (Power rules like $3^4x3^2=3^6$)					
I can understand irrational numbers and surds					
I can simplify surds					
I can rationalise surds in the denominator					
Chapter 10 Linear Equations (10.1 & 10.2 only)					
I can understand inverse operations.					
I can solve simple equations by balancing them, including when they involve brackets, fractions and unknowns on both sides.					
I can form and solve simple linear equations, including solving problems which combine the perimeter and area of shapes with algebra.					
Chapter 10 Linear & Quadratic Equations (10.1 & 10.2 only)					
I can solve simple equations by balancing them, including when they involve brackets, fractions and unknowns on both sides					
I can form and solve simple linear equations, including solving problems which combine the perimeter and area of shapes with algebra					
I can solve quadratic equations by factorising					
I can solve quadratic equations by completing the square					
I can solve quadratic equations by using the quadratic formula					
I can solve equations involving algebraic fractions like $\frac{x+4}{6}+\frac{2x-1}{5}=6$					

Foundationonly | Higher only

Year 10 - Term 4	Check		
	Aut term	Spr Term	Sum Term
Chapter 14 Linear Graphs & Functions (14.1,14.2)			
I can draw vertical and horizontal graphs from equations like y=2 and x=3			
I can draw straight line graphs and tell whether a given point lies on the graph			
I can find the midpoint of a line			
I can find the equation of a straight-line y=mx+c, by working out the gradient and intercept			
I can identify parallel lines			
I can use one point and gradient to find equation of a line			
I can use two points to find gradient and equation of a line			
Chapter 14 Linear & Quadratic Graphs & Functions (14.2S,14.3)			
I can draw straight line, vertical and horizontal graphs, and tell whether a given point lies on the graph			
I can draw a quadratic graph by completing a table of values and plotting the points			
I can identify the turning point, roots and intercepts of a quadratic graph			
Chapter 8 Probability			
I can understand basic probability, including the probability scale, and can calculate the theoretical probability of an event happening			
I can calculate the experimental probability (relative frequency) of an event happening			
I can calculate the expected frequency of an event happening			
I can understand when events are mutually exclusive and know that the probabilities of all the outcomes of an event sum to 1			
I can draw a sample space (possibility space) diagram			
Chapter 10 & 14 Simultaneous Equations and Inequalities, and Kinematic Graphs (10.4, 10.5 & 14.3)			
I can solve linear simultaneous equations by elimination			
I can solve simultaneous equations graphically			
I can solve linear inequalities by balancing and show the solution on a number line			
I can read and interpret kinematics graphs (speed-time or distance-time) and calculate the gradient find the speed or acceleration			
Chapter 10 & 14 Simultaneous Equations and Inequalities, and Solving Graphically (10.3, 10.4, 10.5 & 14.2A)			
I can solve linear simultaneous equations by elimination			
I can solve simultaneous equations involving a linear one and a quadratic one, by substitution.			
I can solve simultaneous equations graphically.			
I can solve equations using iteration.			
I can solve linear inequalities by balancing and showing the solution on a number line.			
I can represent inequalities as regions on a 2D graph.			
I can solve quadratic inequalities.			

Foundationonly | Higher only

Year 10 - Term 5	Check		
	Aut term	Spr Term	Sum Term
Chapter 11 Circles and Constructions			
I can name the parts of a circle.			
I can find the area and circumference of a circle.			
I can solve problems involving circles and part circles (like semi-circles).			
I can find the length of an arc and the area of a sector.			
I can construct triangles using compasses and protractor.			
I can construct the perpendicular bisector, angle bisector and a perpendicular from a point to a line.			
I can understand and draw loci			
I can understand and use the circle theorems, including the alternate segment theorem, and prove the circle theorems (for the highest grades)			
Chapter 10 & 18 Quadratic Equations and Graphs (10.3 & 18.1)			
I can solve quadratic equations by factorising			
I can draw a quadratic graph by completing a table of values and plotting the points			
I can identify the turning point, roots and intercepts of a quadratic graph			
Chapter 14 Equations of Straight Lines and Kinematics (14.1 & 14.4)			
I can find the midpoint of a line			
I can find the gradient of a line and interpret gradient as rate of change			
I can find the equation of a straight-line y=mx+c, by working out the gradient and intercept			
I can identify parallel lines			
I can use one point and gradient to find equation of a line			
I can use two points to find gradient and equation of a line			
I can read and interpret kinematics graphs (speed-time or distance-time) and calculate the gradient find the speed or acceleration			
I can find the area under speed-time graphs to find the distance travelled			
Chapter 12 Ratio and Proportion			
I can change between fractions, decimals and percentages and put lists of fractions, decimals and percentages in order			
I can work out one number as a fraction or percentage of another.			
I can find equivalent fractions to compare proportions			
I can simplify ratios, use a ratio in the form 1:n or n:1 (called a scale), and use scale factors, scale diagrams and maps			
I can divide quantities in a given ratio and compare quantities using ratio			
I can solve ratio problems including questions on recipes and combining ratios			
I can convert between ratios and fractions			
I can calculate a percentage of an amount			
I can work out percentage increase or decrease using both a non-calculator method and by a decimal multiplier on a calculator			
I can solve percentage change problems			
I can solve reverse percentage problems			
I can work out simple interest			

Foundationonly	Higher only	Year 10 - Term 6	Check		
			Aut term	Spr Term	Sum Term
Year 10 Revision & Assessment weeks					
Chapter 17 Calculations 2					
I can calculate roots and indices and use the rules of indices.					
I can use negative and fractional indices					
I can give answers to calculations as exact numbers (inc. in terms of pi)					
I can give answers to calculations as exact numbers (inc. in terms of surds)					
I can understand how to represent big or small numbers using standard form.					
I can do calculations with numbers written in standard form.					

Foundationonly / Higher only	Year 11 - Term 1	Check	
		Aut term	Spr Term
Chapter 19 Pythagoras and Trigonometry			
I can use Pythagoras' theorem to find the hypotenuse or short side on a right-angled triangle			
I can use Pythagoras' theorem to find the length of a line segment between coordinates			
I can apply Pythagoras' theorem to problems in a real life context			
I can find angles and sides in right angled triangles using trigonometry (SOH CAH TOA)			
I can give the exact values of sin 30, cos 60, tan 45 etc to do trigonometry questions on the non-calculator paper.			
I can find the area of a triangle using the trigonometry formula 1/2absinC.			
I can use the sine rule and cosine rule			
I can apply Pythagoras and trigonometry in 3D			
I can understand what a vector is, how to write them and how to combine vectors			
I can understand that parallel vectors are multiples of each other			
I can prove statements using vectors such as whether lines are parallel or collinear			
Chapter 22 Units and proportionality			
I can solve problems on compound units (Speed, Density, Pressure) and understand problems involving rate			
I can compare lengths, areas, and volumes of similar shapes and work out volumes and areas in mathematically similar shapes			
To convert units such as $6m^2$ into cm^2			
I can solve value for money problems, and exchange rates			
I can understand problems in direct proportion, and can recognise the graph of two variables in direct proportion (y=kx, a straight line graph).			
I can understand problems in inverse proportion and can recognise the graph of two variables in inverse proportion (y=k/x a reciprocal graph).			
I can increase and decrease amounts by percentage multipliers			
I can work out simple interest			
I can work out repeated proportional changes (e.g. compound interest)			
I can find the rate of change on linear graphs and on curves by adding in a tangent line			
Chapter 18 Graphs 2 (18.2, 18.3)			
I can recognise, sketch, and interpret graphs of linear and quadratic graphs			
I can recognise, sketch, and interpret cubic functions x^3 and the reciprocal function 1/x (and asymptotes)			
I can plot and interpret real life graphs the trends they show			
Chapter 18 Graphs 2			
I can recognise, sketch, and interpret cubic functions x^3 and the reciprocal function 1/x (and asymptotes).			
I can recognise, sketch and interpret exponential graphs (eg 2^x)			
I can recognise, sketch and interpret the trigonometric graphs - sin x, cos x and tan x.			
I can recognise and sketch transformations of graphs e.g. f(x)+a, af(x), -f(x)			
I can find the gradient of a curve at a point by drawing a tangent to the curve and finding the gradient of that			
I can find the area underneath a curve by splitting it up into shapes like trapezia and triangles			
I can understand and use the equation of a circle and find the equations of tangents to circles			

Foundation only	Higher only	Year 11 - Term 2	Check	
			Aut term	Spr Term
Year 11 Core Subject Assessment & Feedback Weeks				
Chapter 16 Grouped and bivariate data				
I can draw and interpret frequency diagrams inc. pictograms, bar charts, vertical line graphs				
I can draw and interpret histograms for grouped continuous data				
I can find the estimated mean, modal class, and the class containing the median for data in a grouped frequency table and compare data from two tables				
I can draw cumulative frequency graphs and box plots				
I can compare two sets of data represented as box plots				
I can plot data onto scatter diagrams				
I can identify the type of correlation shown on a scatter diagram and identify any outliers				
I can plot a line of best fit onto a scatter diagram and use it to answer problems				
I can understand when it is appropriate to make predictions using the line of best fit and when it is inappropriate to do so				
I can interpret time series graphs and give the trend of the graph				
Chapter 15 Working in 3D				
I understand the properties of solids, edges, faces, vertices				
I can draw the nets of 3D shapes and draw 3D shapes in plan and elevation				
I can sketch the 3D shape from its plan and elevation				
I can find the surface area and volume of cuboids, triangular prisms, general prisms, and cylinders				
I can find the volume of a pyramids, cones, and sphere				
I can find the surface area of pyramids, cones, and spheres				
I can work out the volume and surface area of a frustum of a cone				
I can work with areas and volumes in similar shapes				

Foundation only / Higher only	Year 11 - Term 3 & 4	Check	
		Aut term	Spr Term
Chapter 20 Combined Events			
I can read set data from Venn diagrams or put set data into Venn diagrams and understand the keywords intersect, union, the universal set and complement			
I can solve probability problems based on Venn diagrams			
I can put the outcomes of events into a possibility space diagram and use the diagram to calculate the probability of events happening			
I can draw a frequency tree			
I can draw a probability tree diagram and use this to work out the probabilities of events happening			
I can calculate the probability of independent events occurring (without replacement questions)			
I can use the 'and' and 'or' rules			
I can calculate conditional probability (Probability of A given B)			
I can solve capture-recapture problems (sampling methods)			
Year 11 Core Subject Assessment & Feedback Weeks			
Chapter 21 Sequences			
I can understand sequences and terms			
I can understand the term-to-term rule, make sequences from a given rule and carry on a sequence			
I can identify and use the rule for a sequence which comes from geometrical patterns			
I can find the nth term rule of a sequence and understand what a linear sequence is			
I can understand special sequences like triangle numbers and the Fibonacci sequence			
I can understand the keywords, arithmetic and geometric series			
I can tell when a sequence is a quadratic one			
I can find the nth term rule for a quadratic sequence			
Revision			