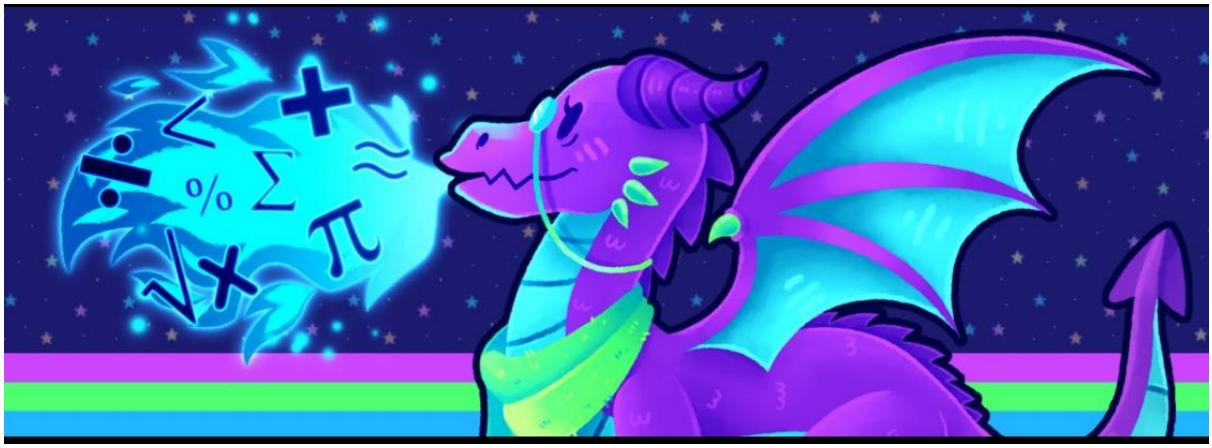

Baldragon Academy

Mathematics

Course Plan

S4

National 5

Summer Term

April – June

55 Periods (based on 5 periods per week)

Flexibility built in, given last week is just before summer holidays

Unit 1 Expressions and Formulae

TOPIC	Timing (Periods)	Lessons
Expansion of Brackets	4	-single bracket, single bracket plus single bracket -double brackets -double brackets with trinomial in one -mixture and simplifying
Factorising	6	-HCF -D.O.T.S -Trinomial simple -Trinomial when a>1 -combinations
Surds	6	-Intro -Simplifying surds -Adding and subtracting surds -Multiplying and dividing surds -Expanding brackets -Rationalising the denominator
Indices	6	-Intro -Rules 1-6 -Mixture
Significant Figures	2	-What is a significant figure -Rounding to significant figures

Scientific Notation	3	-changing from normal to s.n -changing from s.n to normal -Exam type Questions
Fractions and Algebraic Fractions	6	-mixed, improper, adding and subtracting -multiplying and dividing -simplifying algebraic -factorising and simplifying algebraic -algebraic add and sub -algebraic mult and div
Completing the Square	2	-technique -more practice
Circle	4	-Circumference and Area revision -Arc Length -Sector Area -Finding angle at centre
Volume of Solids	6	-Area of all 2d shapes -cube, cuboid and other prisms -cylinder -pyramid and cone -sphere -composite
Gradient and Straight Line	8	-gradient revision -y=mx + c revision -sketching straight lines -Practical Applications of linear equations -gradient formula and finding it between any 2 points -Equation of a line between any 2 points -Given General Equation and finding gradient and y-intercept
Give out Revision for test before the holidays So they can do some in the holidays if they want		

Summer Holidays

Autumn Term

August – October

40 periods based on 5 periods per week

Revision and Test for Expressions and Formulae Unit 1	5	
Unit 2 Relationships		
3D Pythagoras	5	-Revision of Pythagoras -the converse -3D Pythagoras -Problem Solving including use in volume of shapes
Properties of shapes	6	-revision of all angle facts including (angles in triangle, quadrilateral, F,X, Z and C angles) -Sum of Angles in Polygons, interior and exterior -Parts of the Circle (chord, diameter, Tangent etc) -Angles in Circles (isosceles, right angles, Tangents and Kites) -Use of Pythagoras in circle (chords, radius etc)
Work Experience		S4 pupils out for a week (staggered)
Similarity	5	-Similarity and Linear scale factor -Similar Triangles -Parallel lines making triangles similar -Area Similarity -Volume similarity

Solving Equations and Inequalities	4	-solving equations -solving equations with fractions (x2) -solving inequalities -solving equations with brackets
Changing Subject	2	-More basic examples -Harder examples
Simultaneous Equations	6	-Solve by sketching two lines -Solve by elimination with no multiplying -Solve by elimination multiplying 1 equation -solve by elimination multiplying 2 equations -solve worded problems (include exam type)
Function Notation	2	-Introduce to f(x) notation -Calculating f(x) when given the value of x, and calculating x when given the value of f(x).

Holidays

Winter Term

October – December

45 periods based on 5 periods per week

A bit of flexibility built in for revision, mini-assessments, consolidation and missed days. (Teachers Discretion)

TOPIC	Timing (periods)	Lessons
Quadratics	15	-Intro to quadratics, basic shape $y = x^2$ and $y = -x^2$ -Quadratics of the form $y = kx^2$ -Completed square form (revision) -Completed square form max t.p -Completed square form min t.p -General form of quadratic ($y=ax^2 + bx + c$) and identify main features of quadratic (roots, turning point, y-intercept and axis of symmetry) -Finding roots by factorisation (x2) -Sketching quadratics using factorisation and symmetry, include y intercept too (x2) -Quadratic formula (x2) -Discriminant -Exam Questions
Trig Graphs	6	-Graphs of y=sin x y=cos x and y= tan x -Graphs of the form y = a sin x -Graphs of the form y = sin bx -Graphs of the form y = sin (x + c) -Graphs of the form y = sinx + d

		-Graphs with a mixture of all four of these forms
Trig Equations	6	-Introduce Cast/four quadrant diagram -Solving basic Trig equations with positive values e.g sin x = 0.8 -Solving Trig equations with negative values e.g sin x = - 0.7 -Solving more complex trig equations e.g 9sin x + 6 = 2 -Trig Identities -Exam Questions
Revision and Test on Relationships unit 2	5	
Unit 3 Applications		
Using Trigonometry	10	-Revision of Trig from Nat 4 -Area of a triangle -Sine Rule missing side -Sine Rule missing angle -Cosine Rule missing side -Cosine rule missing angle -Choosing the correct formula -Using basic Trig with new formula in problems -Bearing Problems (x2)

Holidays

Spring Term

January- March

66 periods based on 6 periods per week

Unit 3 Applications

TOPIC	Timing (periods)	Lessons
Prelim on first two units (including revision)	5	Date TBC
Vectors	9	-Intro to vectors, switching from visual to component form and vice versa -add, subtract and multiply (by scalar) for 2d vectors -vector of PQ given position vectors p and q -magnitude of 2D vectors -alternative vector journeys -3D co-ordinates of a point in a diagram -add, subtract, multiply by scalar 3D vectors in component form -magnitude of 3D vectors
Percentages	6	-Revision of Percentages -Percentage Profit and Loss -Appreciation and Depreciation using multiplier method including compound interest (x2) -Reverse Percentages -Exam Questions
Fractions	3	-BODMAS (exam) type questions, A lot should be revision

Averages and Comparing Distributions	6	-Revision of Averages and spread (mean, median, mode and range) -Five Figure summaries, IQR and SIQR -Box plots -Standard Deviation (x2) -Exam Questions
Scatter Graphs	3	-Plotting scatter graphs, correlation, and line of best fit -Equation of line of best fit -Using Equation to estimate results
Revise Applications Unit and Assessment	6	
End of Course		
Whole Course Prelim and Revision	6	

Should be finished towards end of March

-changed slightly due to work experience in Autumn Term

Once finished course spend the rest of time going over weak topics, and Exam Preparation