MATHEMATICS DEPARTMENT

The Mathematics Department at Lacon Childe School is made up of the following staff:

Joel Amps	Head of Faculty
Ailsa Harding	Subject Leader
Yasmeen Akhtar	Teacher of Mathematics
Angela Cole	Teacher of Mathematics
James Treble	Teacher of Mathematics
Nathan Turner	Teacher of Mathematics & Computing
Matthew Stinson	Teacher of Mathematics & P.E

Intent:

Our intent is to develop students as confident, independent and numerate problem solvers who actively engage in the study of mathematics and have the resilience to apply their knowledge to unfamiliar contexts.

Our curriculum is designed to take pupils from their individual starting points at the end of Key Stage KS2 to where they need to be at the end of KS4, taking into account their Post-16 plans.

Programme of Study Overview:

Key Stage 3:

All pupils follow a broad and balanced curriculum which cycles through the key mathematical areas of Number, Algebra, Geometry & measure and Statistics. We will aim to broaden and deepen understanding gained at KS2 and layer more complex topic areas on top of these.

In **Year 7** we follow the White Rose Maths scheme of work. Knowledge organisers showing full content are available on the student shared folder. This will be continued into Year 8 from 2021-22.

In **Year 8** we follow the Kangaroo maths scheme of work:

Unit	Lessons	Key 'Build a Mathematician' (BAM) Indicators	Essential knowledge
N7: HCF & LCM by prime factorization, SF	7	• Apply the four operations with negative numbers	• Know how to write a number as a product of its prime factors
N8: Calculating with negative numbers, powers & roots	8	• Convert numbers into standard form and vice versa	• Know how to round to significant figures
S1: Presentation of data	6	• Apply the multiplication, division and power laws of indices	• Know the order of operations including powers
S2: Mean, median, mode, frequency tables	6	• Convert between terminating decimals and fractions	• Know how to enter negative numbers into a calculator
G6: Enlargements (now in Y7), Similarity, Maps & Bearings	8	• Find a relevant multiplier when solving problems involving proportion	• Know that $a^0 = 1$
P1: Introduction to probability	6	• Solve problems involving percentage change, including original value problems	• Know percentage and decimal equivalents for fractions with a denominator of 3, 5, 8 and 10
A4: Further algebra	9	• Factorise an expression by taking out common factors	• Know the characteristic shape of a graph of a quadratic function
N9: Terminating & recurring fractions	4	• Change the subject of a formula when two steps are required	• Know how to measure and write bearings
R&P3: Using ratio, direct proportion, compound units, speed calculations	7	• Find and use the nth term for a linear sequence	• Know how to identify alternate angles
A5: Further sequences – nth term	4	• Solve linear equations with unknowns on both sides	• Know how to identify corresponding angles
G7: Angles on parallel lines & in polygons	6	• Plot and interpret graphs of linear functions	• Know how to find the angle sum of any polygon
N10: Percentage change, reverse percentages, interest – all with multipliers	6	• Apply the formulae for circumference and area of a circle	• Know that circumference = $2\pi r = \pi d$
A6: Linear equations	6	• Calculate theoretical probabilities for single events	• Know that area of a circle = πr^2
G8: Circles, volumes, converting units of area & volume	8		• Know that volume of prism = area of cross-section × length
A7: Linear, quadratic & d-t graphs	10		• Know to use the midpoints of groups to estimate the mean of a set of grouped data
P2: Further probability	8		• Know that probability is measured on a 0-1 scale
			• Know that the sum of all probabilities for a single event is 1
			• Know how to work out measures of central tendency
			• Know how to calculate the range
Total (not allowed for tests, activity days etc.):	109		

Stage 8 BAM Progress Tracker Sheet

Key Stage 4:

We start KS4 teaching from the beginning of Year 9, following the Edexcel higher tier or foundation tier scheme of work. This covers twenty units covering all GCSE content and allows for approximately one full term's revision prior to examinations.

Foundation tier:

GCSE F Tier 3 Year Scheme of Work Objectives

Unit		Title	Estimated hours
1	a	Integers and place value	7
	b	Decimals	6
	c	Indices, powers and roots	8
	d	Factors, multiples and primes	7
2	a	Algebra: the basics	9
	b	Expanding and factorising single brackets	7
	c	Expressions and substitution into formulae	8
3	a	Tables	8
	b	Charts and graphs	8
	c	Pie charts	5
	d	Scatter graphs	7
4	a	Fractions	8
	b	Fractions, decimals and percentages	5
	c	Percentages	8
5	a	Equations	8
	b	Inequalities	6
	c	Sequences	8
6	a	Properties of shapes, parallel lines and angle facts	11
	b	Interior and exterior angles of polygons	7
7	a	Statistics and sampling	5
	b	The averages	7
8	a	Perimeter and area	11
	b	3D forms and volume	7
9	a	Real-life graphs	10
	b	Straight-line graphs	7
10	a	Transformations I: translations, rotations and reflections	7
	b	Transformations II: enlargements and combinations	9
11	a	Ratio	7
	b	Proportion	7
12		Right-angled triangles: Pythagoras and trigonometry	7
13	a	Probability I	6
	b	Probability II	10
14		Multiplicative reasoning	8
15	a	Plans and elevations	7
	b	Constructions, loci and bearings	11
16	a	Quadratic equations: expanding and factorising	6
	b	Quadratic equations: graphs	5
17		Circles, cylinders, cones and spheres	8

Unit		Title	Estimated hours
18	a	Fractions and reciprocals	6
	b	Indices and standard form	7
19	a	Similarity and congruence in 2D	8
	b	Vectors	8
20		Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations	6

Higher tier:

GCSE H Tier 3 Year Scheme of Work Objectives

Unit		Title	Estimated hours
1	a	Calculations, checking and rounding	8
	b	Indices, roots, reciprocals and hierarchy of operations	9
	c	Factors, multiples and primes	7
	d	Standard form and surds	7
2	a	Algebra: the basics	9
	b	Setting up, rearranging and solving equations	9
	c	Sequences	7
3	a	Averages and range	8
	b	Representing and interpreting data	9
	c	Scatter graphs	6
4	a	Fractions	9
	b	Percentages	9
	c	Ratio and proportion	9
5	a	Polygons, angles and parallel lines	9
	b	Pythagoras' Theorem and trigonometry	9
6	a	Graphs: the basics and real-life graphs	8
	b	Linear graphs and coordinate geometry	11
	c	Quadratic, cubic and other graphs	9
7	a	Perimeter, area and circles	9
	b	3D forms and volume, cylinders, cones and spheres	9
	c	Accuracy and bounds	7
8	a	Transformations	9
	b	Constructions, loci and bearings	9
9	a	Solving quadratic and simultaneous equations	9
	b	Inequalities	7
10		Probability	11
11		Multiplicative reasoning	9
12		Similarity and congruence in 2D and 3D	9
13	a	Graphs of trigonometric functions	7
	b	Further trigonometry	11
14	a	Collecting data	7
	b	Cumulative frequency, box plots and histograms	8
15		Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics	9
16	a	Circle theorems	8

	b	Circle geometry	7
17		Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof	9
18		Vectors and geometric proof	11
19	a	Reciprocal and exponential graphs; Gradient and area under graphs	9
	b	Direct and inverse proportion	9

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