Curriculum Information 2017-18

MATHEMATICS

1. Key Stage 3

Mathematics KS3 Topics					[Staff Contact: Ms Nguyen]
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	*MID-ATTAINING* *1 Analysing and displaying data* *2 Number skills* *HIGH ATTAINING* *1 Analysing and displaying data* *2 Number skills*	*MID-ATTAINING* *3 Expressions, functions and formulae* *4 Decimals and measures* *HIGH ATTAINING* *3 Equations, functions and formulae* *4 Fractions*	*MID-ATTAINING* *5 Fractions* *6 Probability* *HIGH ATTAINING* *5 Angles and shapes* *6 Decimals*	*MID-ATTAINING* *7 Ratio and proportion* *8 Lines and angles* *HIGH ATTAINING* *7 Equations* *8 Multiplicative reasoning*	*MID-ATTAINING* *9 Sequences and graphs* *10 Transformations* *HIGH ATTAINING* *9 Perimeter, area and volume* *10 Sequences and graphs*	*MID & HIGH ATTAINING* *Problem-solving activities & investigations*
Year 8	*MID-ATTAINING* *1 Number* *2 Area and volume* *HIGH ATTAINING* *1 Factors and powers* *2 Working with powers*	*MID-ATTAINING* *4 Expressions and equations* *5 Real-life graphs* *HIGH ATTAINING* *3 2D shapes and 3D solids* *4 Real life graphs*	*MID-ATTAINING* *6 Decimals and ratio* *7 Lines and angles* *HIGH ATTAINING* *5 Transformations* *6 Fractions, decimals and percentages*	*MID-ATTAINING* *8 Calculating with fractions* *9 Straight-line graphs* *HIGH ATTAINING* *7 Constructions and loci* *8 Probability*	*MID-ATTAINING* *10 Percentages, decimals and fractions* *3 Statistics, graphs and charts* *HIGH ATTAINING* *9 Scale drawings and measures* *10 Graphs*	*MID & HIGH ATTAINING* *Problem-solving activities & investigations*
Year 9	*MID-ATTAINING* *1 Number* *HIGH ATTAINING* *1 Number* *2 Algebra*	*MID-ATTAINING* *2 Algebra* *3 Graphs, tables and charts* *HIGH ATTAINING* *3 Interpreting and representing data*	*MID-ATTAINING* *4 Fractions and percentages* *5 Equations, inequalities and sequences* *HIGH ATTAINING* *4 Fractions, ratio and percentages* *5 Angles and trigonometry*	*MID-ATTAINING* *6 Angles* *7 Averages and range* *HIGH ATTAINING* *6 Graphs*	*MID-ATTAINING* *8 Perimeter, area and volume 1* *HIGH ATTAINING* *7 Area and volume* *8 Transformations and constructions*	*MID & HIGH ATTAINING* *Problem-solving activities & investigations*

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MATHS Assessment in Key Stage 3:

In Maths, you will receive detailed written feedback on the following pieces of work this year: mid-term, end-of-term tests, official combined unit tests, as well as end of year tests. There will be opportunities for you to respond to that feedback.

Term	Year 7	Year 8	Year 9
AUTUMN	Mid-term test: 16.10.17 End of term test: 11.12.2017	Mid-term test: 16.10.17 End of term test: 11.12.2017	30.10.2017 - HIGHER; 20.11.2017 – FOUNDATION OFFICIAL COMBINED UNIT TESTS: 1 & 2
SPRING	Mid-term test: 05.02.2018 End of term test: 26.03.2018	Mid-term test: 05.02.2018 End of term test: 26.03.2018	19.02.2018 - H & F OFFICIAL COMBINED UNIT TESTS: 3, 4 & 5
SUMMER	End of Year Exams: 15-29.06.18	End of Year Exams: 15-29.06.18	07.05.2018 - H & F OFFICIAL COMBINED UNIT TESTS: 6, 7 & 8 End of Year Exams: 11-22.06.18

KS3 Keywords and Subject Specific Vocabulary					Mathematics
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Mean, median, mode, range, average, discrete, continuous, qualitative, quantitative, data, scatter graph, line of best fit, correlation, positive, negative, sample, population, stem and leaf, frequency, table, sort, pie chart, estimate, primary, secondary, interval, midpoint, survey Integer, number, digit, negative, decimal, addition, subtraction,	Expression, identity, equation, formula, substitute, term, 'like' terms, index, power, collect, substitute, expand, bracket, factor, factorise, linear, simplify Decimal, percentage, inverse, addition, subtraction, multiplication, division, fractions, mixed, improper, recurring, integer, decimal, terminating, percentage, VAT, increase, decrease,	Quadrilateral, angle, polygon, interior, exterior, proof, tessellation, rotational symmetry, parallel, corresponding, alternate, co-interior, vertices, edge, face, sides, triangle, perpendicular, isosceles, scalene, clockwise, anticlockwise, hexagons, heptagons, octagons, decagons, obtuse, acute, reflex, quadrilateral, triangle, regular, irregular, two-dimensional, three-	Function, solve, change, subject, inequality, represent, substitute, bracket, expand, linear, equation, balance, accuracy Ratio, proportion, share, parts, fraction, function, direct proportion, inverse proportion, graphical, linear, compare	Triangle, rectangle, parallelogram, trapezium, area, perimeter, formula, length, width, prism, compound, measurement, polygon, cuboid, volume, symmetry, vertices, edge, face, units, conversion Arithmetic, geometric, function, sequence, nth term, derive, quadratic, triangular, cube, square, odd, even, substitute, linear, graph, coordinate, quadrant, intercept,	(END OF YEAR ASSESSMENT/ PROBLEM-SOVLING/ INVESTIGATING)

	multiplication, division, remainder, operation, estimate, power, roots, factor, multiple, primes, square, cube, even, odd	multiplier, profit, loss	dimensional, measure, line, angle, order, intersecting Decimal, percentage, inverse, addition, subtraction, multiplication, division, fractions, mixed, improper, recurring, integer, decimal, terminating, percentage, VAT, increase, decrease, multiplier, profit, loss		function, parallel	
Year 8	Integer, multiplication, division, power, roots, factor, multiple, primes, square, cube, round, estimate Simplify, expressions, expand, solve, substitute, factorise	Face, edge, vertex, two-dimensional, three-dimensional, solid, elevations, plan, area, perimeter, formula, length, width, measurement, volume, circle, segment, arc, sector, cylinder, circumference, radius, diameter, pi, segment, accuracy, surface area, hypotenuse Linear, graph, distance, time, coordinate, quadrant, real-life graph, gradient, intercept, function, solution, parallel	Transformation, rotation, reflection, enlargement, translation, single, combination, scale factor, mirror line, centre of rotation, centre of enlargement, column vector, vector, similarity, congruent, angle, direction, coordinate, describe Decimal, percentage, inverse, addition, subtraction, multiplication, division, fractions, mixed, improper, recurring, integer, decimal, terminating, percentage, VAT, increase, decrease, multiplier, profit, loss	Construct, face, edge, vertex, two-dimensional, three-dimensional, solid, congruent, angles, regular, irregular, degree, bisect, perpendicular, region Probability, dependent, independent, conditional, tree diagrams, sample space, outcomes, theoretical, relative frequency, fairness, experimental	Congruence, side, angle, compass, construction, shape, volume, length, area, scale factor, enlargement, similar, perimeter, map, plan Linear, graph, coordinate, quadrant, gradient, intercept, function, solution, parallel, perpendicular, quadratic, cubic, coefficient	(END OF YEAR ASSESSMENT/ PROBLEM-SOVLING/ INVESTIGATING)
Year 9	Integer, number, digit, negative, decimal, addition, subtraction,	Mean, median, mode, range, average, discrete, continuous, qualitative,	Addition, subtraction, multiplication, division, fractions, mixed, improper,	Coordinate, axes, 3D, Pythagoras, graph, speed,	Rotation, reflection, translation, transformation,	(END OF YEAR ASSESSMENT/ PROBLEM-SOVLING/

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multiplication, division, remainder, operation, estimate, power, roots, factor, multiple, primes, square, cube, even, odd, surd, rational, irrational standard form, simplify	quantitative, data, scatter graph, line of best fit, correlation, positive, negative, sample, population, stem and leaf, frequency, table, sort, pie chart, estimate	recurring, reciprocal, integer, decimal, termination, percentage, VAT, increase, decrease, multiplier, profit, loss, ratio, proportion, share, parts	distance, time, velocity, quadratic, solution, root, function, linear, circle, cubic, approximate, gradient, perpendicular, parallel, equation	enlargement, scale factor, vector, centre, angle, direction, mirror line, centre of enlargement, describe, distance, congruence, similar, combinations, single, corresponding, constructions, compasses, protractor, bisector, bisect, line segment, perpendicular, loci, bearing	INVESTIGATING)
Expression, identity, equation, formula, substitute, term, 'like' terms, index, power, negative and fractional indices, collect, substitute, expand, bracket, factor, factorise, quadratic, linear, simplify, approximate, arithmetic, geometric, function, sequence, nth term, derive	Addition, subtraction, multiplication, division, fractions, mixed, improper, recurring, reciprocal, integer, decimal, termination, percentage, VAT, increase, decrease, multiplier, profit, loss, ratio, proportion, share, parts	Quadrilateral, angle, polygon, interior, exterior, proof, tessellation, symmetry, parallel, corresponding, alternate, co-interior, vertices, edge, face, sides, Pythagoras' Theorem, sine, cosine, tan, trigonometry, opposite, hypotenuse, adjacent, ratio, elevation, depression, segment, length	Triangle, rectangle, parallelogram, trapezium, area, perimeter, formula, length, width, prism, compound, measurement, polygon, cuboid, volume, nets, isometric, symmetry, vertices, edge, face, circle, segment, arc, sector, cylinder, circumference, radius, diameter, pi, composite, sphere, cone, capacity, hemisphere, segment, frustum, bounds, accuracy, surface area		

KS3 How to support your son at home — Mathematics

What sorts of independent work/homework will he get?	How much help should you give him?	What are the top three tips for supporting independent learning?	Useful resources and links
Home work is set based on the topics taught in class and according to the schemes of work. It will be problems and maths work based on what they are currently studying. Independent work such as	It is really important that your son completes his maths work himself, so we are given an accurate picture of where he is. The best help you can give is to make sure he challenges	1. Many of the key skills in maths are learned through repetition – encourage your son to practice maths skills on MyMaths as regularly as possible and on top of his maths homework	The school has access to a range of online maths software that your son can use at home to practice his maths skills • www.mymaths.co.uk online maths software that students can complete homework on, play games and reinforce in class learning (First Level username: foresthill, password: boost1, students have their own personal Second Level password available from maths teachers)

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investigations and research on topics can also be set. Problem solving and written responses to problems are a key part of the maths curriculum and parts of these may be set to be completed at home.	himself and completes as many problems as possible. However it may be useful for you to let your son explain his calculations and approach to you.	2. Make sure that your son has practice workbooks at home to do in his own time and encourage him to complete them. 3. Check that homework is completed at home and to a high standard.	• Mathspace – available through London Grid for Learning – accessible through FHS Connect • Sam Learning – schools online resources • BBC Bitesize There are also a range of workbooks you can buy to support your son, for example https://www.cgpbooks.co.uk/Parent/books_ks3_maths_workbooks

2. Key Stage 4

MATHEMATICS KS4 TOPICS

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
Year 10 Foundation	9. Graphs	10. Trans-formations	11. Ratio and proportion	12. Right-angled triangles	13. Probability	14. Multiplicative reasoning	15.Con-structions, loci and bearings	16. Quadratic equations and graphs	17. Perimeter, area and volume 2
Year 10 Higher	9. Equations and inequalities	10. Probability	11. Multiplicative reasoning	12. Similarity and congruence	13. More trigonometry	14. Further statistics	15. Equations and graphs	16. Circle theorems	17. More algebra
Year 11 Foundation	18. Fractions, indices and standard form	19. Congruence, similarity and vectors							
Year 11 Higher	18. Vectors and geometric proof	19. Proportion and graphs							

KS4 How to support your son at home   Maths

What sorts of independent work / homework will he get?	How you can help	Useful resources and links
Home work is set based on the topics taught in class and according to the schemes of work. Independent work involving the revision of key skills is considered vital to increasing your child's current	Check that homework is completed at home and to a high standard. Help your child to devise a revision programme which is manageable and effective by addressing target topics	Exam board course link: https://www.pearsonschoolsandfecolleges.co.uk/secondary/Mathematics/11-16/EdexcelGCSEMaths2015/EdexcelGCSEMaths2015.aspx

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performance grade, as well as frequently completing past exam papers and self-marking them.	identified from his individualised skills map in year 11, or official unit tests completed throughout KS4. We would recommend a minimum of 20 minutes revision each evening, which does not include time spent on homework.	Recommended revision guide: REVISE Edexcel GCSE (9-1) Mathematics Foundation/Higher Guided Revision Workbook

MATHS Assessment in Key Stage 4:

Term	Year 10	Year 11
AUTUMN	27.11.2017 - H & F OFFICIAL COMBINED UNIT TESTS: 9, 10 & 11	20.11.2017 - H & F OFFICIAL COMBINED UNIT TESTS: 18, 19 & 20 Pre-public exams: 04-15.12.17
SPRING	12.03.2018 - H & F OFFICIAL COMBINED UNIT TESTS: 12, 13 & 14	05.03.2018: March PPE
SUMMER	18.06.2018 - HIGHER; 04.06.2018 – FOUNDATION OFFICIAL COMBINED UNIT TESTS: 15, 16 & 17 Pre-public exams: 09-20.07.18	**Public exam dates: 24.05.18 – 12.06.18**

3. Assessment Criteria (KS3 and 4)

FOREST HILL STEPS/GRADE to success criteria			Mathematics
Strand	**Grade 2**	**Grade 5**	**Grade 8/9**
NUMBER	Read, write and order integers, up to and including 4 digit numbers Use mental methods to add and subtract positive and negative integers Use written methods to multiply & divide up to 3 digit numbers by a single-digit number Multiply and divide whole numbers by powers of 10 Understand and apply BIDMAS	Use index notation, including the use of negative integer powers Estimate the answer to square roots & cube roots e.g. √70 must lie between 8 and 9 Calculate the LCM and HCF of a number when given the prime factorisation of each number Calculate the upper and lower bounds of a number to a given degree of accuracy Use upper and lower bounds for addition and subtraction calculations	Solve and calculate the value of complex indices including surds Rationalise more complex denominators Understand and use rational and irrational numbers

	Understand and use inverse operations Identify square numbers, up to 144 Know the definition of a prime number and be able to list the first 10 prime numbers Know the definition of multiples and factors and to be able to list them Round whole number to the nearest 10, 100 and 1000 Use vocabulary associated with fractions and to be able to list them Understand and use fraction notation Use diagrams to find equivalent fractions and to make comparisons Convert simple fractions into decimals, such as tenths and hundredths Read from scales and measures Use the 'less than' and 'greater than' symbols	Estimate answers to calculations with the use of rounding numbers Multiply & divide integers and decimals by a number between 0-1 Add, subtract, multiply and divide mixed numbers	
ALGEBRA	Write and plot coordinates in the positive quadrant Multiply, divide, add and subtract basic algebra e.g. a + a, 2 x a Write expressions using algebraic notation e.g. I think of a number times it by 2 and add 5	Construct and solve linear equations that involve fractions and fractional answers Construct and solve linear inequalities Expand and factorise single and double brackets, including difference of two squares Substitute fractional and negative values into expressions Rearrange formulae and use to solve problems Calculate the equation of a line in the form of $y = mx + c$	Calculate the nth term of a quadratic sequence Solve simultaneous equations with one linear and one quadratic function Use the equation of a circle to find points of intersection with a line Calculate the equation of a circle given the centre and a point on the circumference Estimate the area under a quadratic or other graph by dividing It into trapezia Calculate the acceleration and distance from velocity-time graphs Simplify and solve algebraic fractions

			Calculate the inverse function and construct and use composite functions
RATIO & PROPORTION	Convert fractions to a ratio e.g. ⅓ and shown in the ratio 1:2 Write ratios in their simplest form Solve simple problems involving direct proportion	Calculate missing dimensions in similar shapes Calculate compound interest and depreciation after 2 to 5 years Write, simplify and divide a ratio given situations Convert between currencies Interpret and solve best buy deals	Set up, solve and interpret the answers in growth and decay problems
GEOMETRY	Know the definition of regular and irregular polygons Know the names of regular polygons up to decagon Name the different angles, acute, obtuse, right-angle and reflex Understand the definition of parallel and perpendicular lines Understand the properties of different quadrilaterals and triangles Understand the definition of line symmetry and rotational symmetry Draw lines of symmetry on basic shapes as well as give order of rotational symmetry Understand the definition of congruency and draw tessellations	Calculate the area and arc length of a sector Calculate the length of a line given two coordinates Define a geometric progression and continue a sequence Use and apply trigonometry to right-angled triangle, including worded problems Identify roots and turning points on a quadratic graph Calculate volumes of 3D shapes and prisms Transform shapes by reflecting, rotating, enlarging and translating (using column vectors) Use constructions to solve loci problems	Transform both trigonometric and other functions e.g. $y = -f(x)$ Sketch quadratic functions; identifying y and x-axis intercept and turning points Use the sine and cosine rule in 3 dimensions Prove all circle theorems algebraically Use and apply vectors to prove lines are collinear or parallel
STATISTICS	Collect discrete data and record results using a frequency table Draw a bar chart for discrete data Calculate the total population from a bar chart or table	Construct and interpret pie charts Construct and interpret composite bar charts Display data with an appropriate graph	Extension of constructing and interpreting histograms

	Find greatest and total population from a bar chart or table Find greatest and least values from a bar chart or table Use the mode and range to describe sets of data Read information and work out totals from a pictogram Represent information as a pictogram (where the symbol represents 1 or 2 units)	Construct and interpret real-life graphs (including speed/distance/velocity graphs)	
PROBABILITY	Discuss events using words such as likely, uncertain and impossible Place the probability of events on a scale from impossible to certain Find probabilities based on equally likely outcomes in simple contexts List all outcomes for single events systematically	Write probabilities using fractions, percentages or decimals Use tree diagrams to calculate the probabilities of two dependant events Understand and use experimental and theoretical probabilities to calculate estimated outcomes Work out probabilities from Venn diagrams to represent real-life situations and also 'abstract' sets of numbers/values	Use a Venn diagram to calculate conditional probability