Mathematics

Programme of Study: 2020-21

Discovery - KS3:

Curriculum intent, implementation and impact:

Our Discovery Scheme of Work (SoW) is designed entirely on the DfE framework. We have translated this framework by structuring the specification into 16 units of work. This spiralling SoW enables our students to build confidence and retention through repetition, mastery and extension of knowledge. The SoW is intended to build firm foundations for Destiny by deepening students' knowledge, understanding and confidence.

Our medium term plans ensure that our students have access to every unit in the framework. These units have been further divided into three ability ranges to support with differentiation when planning. Every teacher is able to see the scope of each unit so that there is no ceiling on learning.

We evaluate the knowledge and skills that the students have gained through the use of rigorous assessments three times a year. Coupled with continuous in-class assessment in the form of memory checks, starters and interleaving hwk.. This information is used to measure and track the progress of our students. This informs planning and enables teachers to respond to the needs of the class using the mark- plan-teach cycle. Start of lessons are used to recap prior and prerequisite knowledge in order to embed this knowledge in their long term memory. This frees up their working memory to attend to current learning. We are particularly conscious of the role that literacy and vocabulary plays in unlocking the maths curriculum. Our teachers teach the meaning of maths-specific language and there is a real emphasis on note taking and modelling.

Teachers share resources when planning and our SOW has a section on how we can embellish each unit of work. We are constantly building assessment materials for KS3 in line with the new GCSE curriculum because we believe in a five year long-term plan for mathematics.

Our homework is designed to support students to achieve fluency and is made up of 3 parts every week. Part A is made up of foundation tier GCSE work where typical errors are made and marks are lost. Part B and C are added by the teacher based on the needs of the class. Part B is current work based on the current topic being covered in class and part C is a recall task of a topic that was covered recently. All 3 parts work together to help exam skills, repetition and retention.

Maths is about concepts not context. Our curriculum specifies the knowledge that should be taught but our teachers bring this knowledge to life. We use enrichment tasks and project work that link units together to allow our students to engage in maths. The aim of this is to change student perceptions, and their relationships with maths by helping them to understand the world around them through Mathematics.

The order of the topics have been adjusted to allow for new shorter Fitness Checks instead of assessments in term1 AND in anticipation for another lockdown in term 2 and 3 so we have tried to have topics that are deemed easier to deliver from a distance.

Curriculum map	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	0. Classroom constitution and expectations 1. Whole numbers and decimals 2. Measures, perimeter, Area 3. Expression and formulae 4. Fractions, decimals, percentages	13. Sequences 16. Probability 11. Factors and multiples Leeway	9. Transformations and symmetry 7. Decimal calculations 15. Ratio and proportion	6. Graphs 5. Angles and 2D shapes 12. Constructions and 3D shapes	8. Statistics(recap) 10. Equations 14. Multiplying, dividing and decimal calculations	Tailored revision based on the needs of the class. Using peer work, past papers and introducing revision skills. Transition/ Project Work
Students learn how to:	See maths department medium term plans for full details of content for each topic. ***The assessments do move based on the data deadlines set by the school so that the data is fresh and current.***					
Assessment	MathsFit Starters x 15. Shorts Fitness Checks	Graded tiered exams in preparation for KS4 skills		Graded tiered exams in preparation for KS4 skills		Graded tiered exams in preparation for KS4 skills

Curriculum map	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 8	0. Classroom constitution and expectations 1. Whole numbers and decimals 2. Measures, perimeter, Area 3. Expression and formulae 4. Fractions, decimals, percentages	13. Sequences 16. Probability 11. Factors and multiples, roots, cubes Leeway	9. Transformations and symmetry 7. Decimal calculations 15. Ratio and proportion	6. Graphs 5. Angles and 2D shapes 12. Construction and Pythagoras' Theorem	8. Statistics 10. Equations 14. Multiplying, dividing and decimal calculations	Tailored revision based on needs of the class. Ising peer work, past papers and introducing revision skills. Transition/ Project Work
Students learn how to:	See maths department medium term plans for full details of content for each topic. ***The assessments do move based on the data deadlines set by the school so that the data is fresh and current.***					
Assessment	Shorts Fitness Checks	Graded tiered exams in preparation for KS4 skills		Graded tiered exams in preparation for KS4 skills		Graded tiered exams in preparation for KS4 skills

Discovery Curriculum enhancement (please reference topics that include trips, events or after school clubs):

Maths Gym every Tuesday for support and revision (Not possible due to Covid, bubbles, etc. Will be open as soon as it's safe)
Junior Maths challenge for y7&8 during April (Hopefully this will happen on line following UKMT guidance letter)
Y8 enrichment project in term 4. Applying maths to real life situations: PLASTICS and volume work
Y7 enrichment project in term 1. Applying maths to real life situations: OUR class data
(Both moved to Term 6 due to Covid so group work can go ahead)

Work with Science Dept's program of study:

Year 7

Term 6 due to Covid and lack of group work opportunity (Usually Term 1)(Maths are doing Data project with all groups)
Term 6 (Maths will do algebra skills to help skills of rearranging, and solving to link with Science to deliver their unit on Forces, which requires use of formula)

Year 8

Term 6 due to Covid and catch up work (Usually Term 1)(Maths will use Percentages as a vehicle to look at food packaging and nutritional value to link with Science's Food Topic)
Term 6 due to Covid and catch up work (Usually Term 3) (Maths are doing plastics/ volume project with all groups)

Year 9 - Foundation Pathway

Curriculum intent:

Our approach to teaching Y9 builds on the prior learning covered by our KS3 SoW, in order to support the transition from Discovery to Destiny**.** Following the mastery approach, the students study fewer topics in greater depth. This begins a three year cycle to cover 20 units of work as outlined below.

We evaluate the knowledge and skills that the students have gained through the use of rigorous examinations three times a year. We follow a growing model of using real past papers. Although all year 9 classes take the foundation mock papers, teachers of the higher sets keep an eye on their scores so that tier entry decisions can be made with detailed knowledge. By using examiner mark schemes and real grade boundaries it allows our students to demonstrate their understanding of the examinations. Our teachers are able to assess the impact of their teaching.

As per the Discovery model, our teachers use formative assessment and continuous in class assessment to inform planning. This enables our teachers to respond to the needs of the class using the mark- plan-teach cycle. Start of lessons are used to recap prior and prerequisite knowledge in order to embed this knowledge in their long term memory. This frees up their working memory to attend to current learning. We are particularly conscious of the role that literacy and vocabulary plays in unlocking the maths curriculum. Our teachers teach the meaning of maths-specific language and there is a real emphasis on note taking and modelling.

Our homework is designed to support students to achieve fluency and is made up of 3 parts every week. Part A is made up of foundation tier GCSE work where typical errors are made and marks are lost. Part B and C are added by the teacher based on the needs of the class. Part B is current work based on the current unit of work being covered in class and part C is a recall task of a topic that was covered recently. All 3 parts work together to help exam skills, repetition and retention.

Year 9 is very much a foundation year that helps the students make a link from KS3 to KS4 Maths. The emphasis is to connect the skills and knowledge as well as help develop techniques for GCSE-style problems at foundation level. The teaching is geared to help students bridge between single answer questions to those that require more reading and interpretation so that the appropriate Maths is used to solve the question and real-life problems in context. Every student is stretched with their GCSE journey in mind.

The order of the topics have been adjusted to allow for new shorter Fitness Checks instead of assessments in term1 AND in anticipation for another lockdown in term 2 and 3 so we have tried to have topics that are deemed easier to deliver from a distance.

Curriculum map	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 9 Higher Tier	0. Classroom constitution and expectations 1a. Calculations checking and rounding 1b. Indices, roots, reciprocals, BIDMAS 1c. Factors, multiples, primes, standard from, surds 2a. Basic algebra, setting up , rearranging, solving	2b. Sequences 3a. Averages and range 3b. Scatter graphs, representing and interpreting data	4a. Fractions, percentages 4b. Ratio and proportion Leeway	4b. Ratio and proportion 4b. Ratio and proportion	5a. Polygons 5b. Pythagoras, Trig	6a. Basic graphs and real life graphs Bespoke revision and repetition of topics as necessary Transition/ Project Work

Year 9 Foundation Tier	0. Classroom constitution and expectations 1a. Integers & place Value 1b. Decimals, Indices, roots, 1c. Factors, multiples, primes, standard from, surds 2a. Basic algebra, setting up , rearranging, solving 2b. Expressions, substitution, formula	3a. Tables, charts, graphs 3b. Pie Charts, 3c. Scatter graphs	4a. Fractions, decimals, percentages 4b. Percentages Leeway 5a. Equations & Inequalities	5a. Equations & Inequalities 5b. Sequences 6. Properties of Shapes, parallel lines, angle facts	6a. Properties of Shapes, parallel lines, angle facts, interior and exterior angles, polygons Unit 6b- interior and exterior angles	Bespoke revision and repetition of topics as necessary Transition/ Project Work

Students learn how to:	See maths department medium term plans for full details of content for each topic. ***The assessments do move based on the data deadlines set by the school so that the data is fresh and current.***					
Assessment	Fitness Checks	One single mock paper - foundation tier for all (GCSE past paper)	Mock exams using real first part of GCSE past paper, marks scheme and grade boundaries	Mock exams using real second two parts part of GCSE past paper, marks scheme and grade boundaries		Whole school end of year exams using real GCSE past papers

Year 9 - Curriculum enhancement (please reference topics that include trips, events or after school clubs):

Maths Gym every Tuesday for support and revision (Not possible due to Covid, bubbles, etc. Will be open as soon as it's safe)
Intermediate Maths Challenge (Hopefully this will happen on line following UKMT guidance letter)

Destiny - KS4:

Exam board and Specification details:
EDEXCEL 1MA1

Assessment objectives:
See the Department Medium Term SOW for each of these over the 20 units specified by the exam board and OFQUAL
(too many to add into this document).

The order of the topics have been adjusted to allow for new shorter Fitness Checks instead of assessments in term1 AND in anticipation for another lockdown in term 2 and 3 so we have tried to have topics that are deemed easier to deliver from a distance.

Curriculum map:	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10 Higher Tier	Bespoke Topics based on Student Lock-down survey 6b. Linear graphs, coordinate geometry 6c. Quadratic,cubic and other graphs 7a. Perimeter, area, volume of prisms	6c. Quadratic,cubic and other graphs 7a. Perimeter, area, volume of prisms 7b. 3Dforms, volume, cylinders, cones, spheres	7c. Accuracy and bounds 8a. Transformations 8b. Construction, loci and bearing	9a. Solving quadratic and simultaneous equations 9b- Inequalities 10-Probability 11- Multiplicative Reasoning	12. Similarity and congruence in 2D and 3D Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	Bespoke revision and repetition of topics as necessary Transition/ Project Work

Curriculum map:	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10 Foundation Tier	Bespoke Topics based on Student Lock-down survey 7. Statistics, sampling and averages 8. Perimeter, area, volume	8. Perimeter, area, volume 9a. Real life graphs 9b. Straight line graphs Leeway	9a. Real life graphs 9b. Straight line graphs 10. Transformations	11a. Ratio 11b. Proportion 12. Right angled triangles, Pythagoras, Trig	13. Probability Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	Bespoke revision and repetition of topics as necessary Transition/ Project Work
Students learn how to:	See maths department medium term plans for full details of content for each topic.					
Assessment	Fitness Checks	One single mock paper - foundation tier for all (GCSE past paper)	Mock exams using real first part of GCSE past paper, marks scheme and grade boundaries. Tier Check for Set 1	Mock exams using real second two parts part of GCSE past paper, marks scheme and grade boundaries		Whole school end of year exams using real GCSE past papers

Curriculum map:	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 11 Higher Tier	Bespoke Topics based on Student Lock-down survey 13a. Graphs of Trig function 13b. Further Trig 14a. Collecting data	14b. Cumulative frequency, box plots & histograms 15. Expanding quadratic . Graphs of circles, cubics & quadratics. 16a. Circle theorems. 16b. Circle geometry Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	17. Rearranging, algebraic fractions,and solving, rationalising surds, proof 18. Vectors and geometric proof 19a. Reciprocal and exponential graphs. GRadients, area under curve.	19a. Reciprocal and exponential graphs. GRadients, area under curve. 19b. Direct and indirect proportion Bespoke revision and repetition of topics as necessary Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	Bespoke revision and repetition of topics as necessary	

Curriculum map:	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 11 Foundation Tier	Bespoke Topics based on Student Lock-down survey 13. Probability 14. Multiplicative reasoning 15a. Plans and elevations	15b. Construction Loci and bearings 16a. Quadratic equations expanding and factorising 16b. Quadratic equations and graphs. 17. Circle, cylinders, cones, spheres Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	18a. Fractions and reciprocals 18b. Indices and standard form 19a. Similarity and congruence in 2D 19b. Vectors	20. Rearranging. Graphs and cubics and reciprocals. Simultaneous equations Bespoke revision and repetition of topics as necessary Leeway for bespoke revision and repetition of topics as necessary in preparation for mock exams	Bespoke revision and repetition of topics as necessary	
Students learn how to:	See maths department medium term plans for full details of content for each topic.					
Assessment	Tier check for all classes using foundation paper 1	November - PiXl Wave Mock exams using real GCSE past		March - PiXl Wave Mock exams using real GCSE past papers, marks	Actual external GCSE exam paper 1	Actual external GCSE exam paper 2 and 3

		papers, marks scheme and grade boundaries		scheme and grade boundaries		

Destiny curriculum enhancement (please reference topics that include trips, events or links to other subjects):
Maths Gym every Tuesday for support and revision (Not possible due to Covid, bubbles, etc. Will be open as soon as it's safe)
Intermediate Maths Challenge (Hopefully this will happen on line following UKMT guidance letter)