

2. CURRICULUM IMPLEMENTATION OVERVIEW PLAN

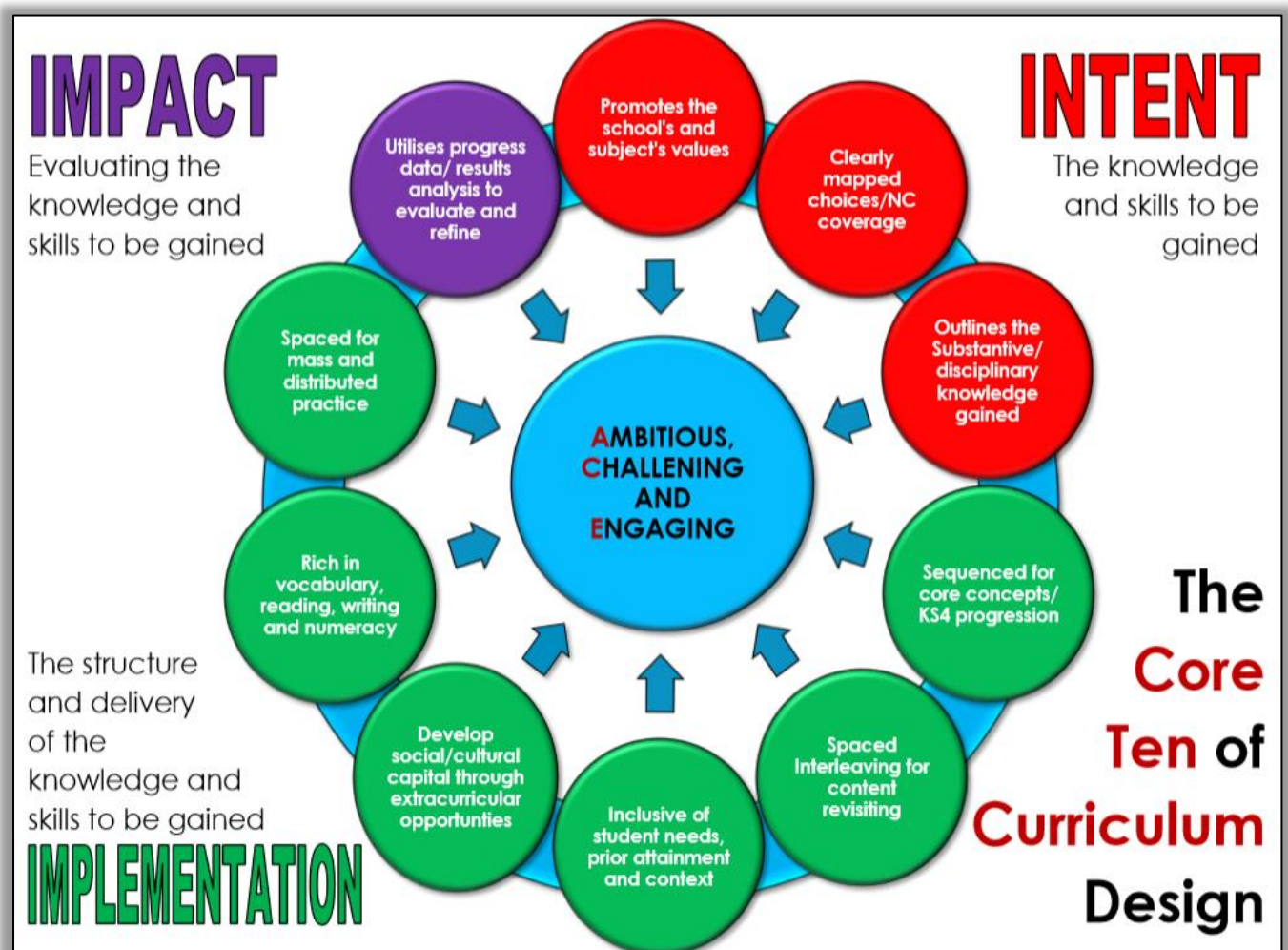
Key Stage 3

Subject: Mathematics

Author: CLA

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Document(s) which inform this Curriculum Implementation are:

1. Curriculum Intent Overview Plan (KS3)

THINKING PROCESS - CURRICULUM IMPLEMENTATION OVERVIEW PLAN – KS3

IMPLEMENTATION – SEQUENCING AND PRACTICE

How are your topics sequenced below so as to ensure the following:

- key concepts are ordered and taught, so as to support progression to more challenging material
- content and concepts ordered to support progression from KS2 and to KS4
- topics are spaced between unrelated topics, to allow thinking time; then revisited and furthered
- mass practice (end of topic assessments) are used to evaluate the knowledge and skills gained
- distributed practice (mini assessments) are used where content/topics are reassessed in shortened versions, at later spaced out intervals

YEAR	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	
7	Unit/Topic	1.1 Types of Numbers (4) 2.1 Place Value (4) 5.1 Geometric Notation (2) 3 Rounding & Estimating (3) 11.1 Measuring (2) 1.2 Factors & Multiples (4) 10 Sequences (3)	2.2 Calculation Methods (4) 6 Properties of Shapes (5) 4.1 Ordering Numbers (3) 1.3 Powers & Roots (4) 16.1 Coordinates & Lines (3) 9 Ratio (4)	2.3 Order of Operations (4) 15.1 Area & Perimeter (3) 2.4 Decimal Calculations (4) 11.2 Conversions (2) 4.2 Ordering Fractions (6)	12 Missing Angles (3) 7.1 Intro to Algebra (5) 5.2 Constructing Triangles (2) 17 Graphs & Charts (6)	15.2 Volume & SA (2) 8 Fractions & Percentages (4) 7.2 Expanding Brackets (3) 11.3 Time (3) 13.1 Multiply & Divide Fractions (4) 18.1 Averages (3) 13.2 Percentages (4)	14 Equations (5) 13.3 Adding & Subtracting Fractions (4) 16.2 Transformations (4) 13.4 Using Percentages (4) 15.2 Averages from Tables (2)
	KS3 NC covered	N1, N3, N13, N14, N9, A13, G3, G4, G5, G6	N2, N4, N6, N7, R4, R5, R6, G7, G15,	N4, N5, N6, N9, R1, G1, G2	A1, A2, G4, G8, S2	N4, N10, N9, N12, A3, R1, R3, G15, S1, S2	N4, A6, A7, R2, G8, S1, S2
	Powerful Knowledge	<ul style="list-style-type: none"> • Rounding & Estimation • Measuring 	<ul style="list-style-type: none"> • Calculation methods • Ratio 	<ul style="list-style-type: none"> • Area & perimeter • Conversions 	<ul style="list-style-type: none"> • Graphs & charts 	<ul style="list-style-type: none"> • Volume & surface area • Fractions & Percentages • Time • Averages • Percentages 	<ul style="list-style-type: none"> • Using percentages
	Mass Practice	Exit ticket / topic test completed a minimum of a week after topic completion for all topics (see Appendix A & B). These may be completed in topic pairs to reduce teacher workload. Exit tickets will be used as formative assessment, marked by class teachers and given detailed feedback, with dedicated time for student reflection / improvement. These will not be graded as topics in maths are no longer categorised by grade but will instead be measured against the expected outcomes for a topic.					
	Distributed Practice	Topics are revisited in DNAs on a cycle. Each week there will be at least 1 DNA that takes the form of "last lesson, last week, last month" to encourage recall and revisiting of topics (see Appendix C). In addition to this, topics are often revisited when they link to new topics or when the unit is revisited for further development later in the PoS. (see Appendix D) All year groups will have at least 3 assessment points in the year which will be cumulative of content as the year progresses.					

<p>What are the key concepts to be covered?</p>	<ul style="list-style-type: none"> • Calculate powers & roots • Apply all four operations with decimals • Use fractions and percentages to represent quantities of another • Interpret percentage change • Apply all four operations with fractions • Use estimation and inverses to check calculations • Collecting like terms • Expanding brackets • Substitute into formulae • Solve linear equations • Write equations of lines parallel to the coordinate axes and $y=x$, $y=-x$ • Calculate surface area of cubes and cuboids • Know and apply geometric conventions of labelling
<p>What prior knowledge, at KS2, are you assuming they have?</p>	<ul style="list-style-type: none"> • Multiply and divide numbers with up to three decimal places by 10, 100, and 1000 • Use long division to divide numbers up to four digits by a two-digit number • Use simple formulae expressed in words • Generate and describe linear number sequences • Use simple ratio to compare quantities • Write a fraction in its lowest terms by cancelling common factors • Add and subtract fractions and mixed numbers with different denominators • Multiply pairs of fractions in simple cases • Find percentages of quantities • Solve missing angle problems involving triangles, quadrilaterals, angles at a point and angles on a straight line • Calculate the volume of cubes and cuboids • Use coordinates in all four quadrants • Calculate and interpret the mean as an average of a set of discrete data • Know percentage and decimal equivalents for fractions with a denominator of 2, 3, 4, 5, 8 and 10 • Know the rough equivalence between miles and kilometres • Know that vertically opposite angles are equal • Know that the area of a triangle = $\text{base} \times \text{height} \div 2$ • Know that the area of a parallelogram = $\text{base} \times \text{height}$ • Know that volume is measured in cubes • Know the names of parts of a circle • Know that the diameter of a circle is twice the radius • Know the conventions for a 2D coordinate grid • Know that $\text{mean} = \text{sum of data} \div \text{number of pieces of data}$

What knowledge do they need to have a successful start to Year 8?		<ul style="list-style-type: none"> • Know the first 6 cube numbers • Know the first 12 triangular numbers • Know the symbols =, ≠, <, >, ≤, ≥ • Know the order of operations including brackets • Know basic algebraic notation • Know that area of a rectangle = $l \times w$ • Know that area of a triangle = $b \times h \div 2$ • Know that area of a parallelogram = $b \times h$ • Know that area of a trapezium = $((a + b) \div 2) \times h$ • Know that volume of a cuboid = $l \times w \times h$ • Know the meaning of faces, edges and vertices • Know the names of special triangles and quadrilaterals • Know how to work out measures of central tendency • Know how to calculate the range 					
How are topics spaced between unrelated topics?		Units are split up throughout the year, previous topics from a unit should be recapped when beginning the next topics (usually they form pre-requisites for the next topic). (see Appendix D)					
8	Unit/Topic	1.1 Prime factorisation (3) 2.2 Calculator Skills (2) 5.1 Index Laws (4) 1.2 Sig Figs (2) 3.2 Maps & Bearings (3) 7.1 Ratio (4) 3.1 Enlargement (3)	4 Probability (6) 2.1 Negative Numbers (8) 8 Sequences (4) 2.3 Order of Operations (4) 12.1 Circles (4)	7.2 Proportion (4) 5.2 Algebraic Manipulation (6) 1.3 Standard Form (2) 3.3 Plans & Elevations (3) 6 FDP (5)	9.1 Angles in Polygons (3) 11 Equations (4) 15 Data Presentation (4) 13.1 Straight Line Graphs (6)	12.2 Volumes (4) 10.1 Percentage Inc/Dec (3) 7.3 Speed (3) 14.1 Presenting Probability (4) 13.2 Functions & Graphs (5) 10.2 Financial Maths (3)	14.2 Experimental Probability (4) 9.2 Angles in Parallel Lines (4) Bletchley Park 16 Averages (6)
	KS3 NC covered	N3, N7, N13, N14, N15, A1, R2, R24, R4, R7, G8	N4, N5, N6, A13, A14, P1, P2,	N8, N9, N10, A1, A2, A3, A4, R6, G15,	A6, A7, A8, A9, G10, G12, S2,	N10, N11, A6, A9, R8, R10, G15, P1, P2, P4	G10, G11, P1, P3, P4, S1, S2
	Powerful Knowledge	<ul style="list-style-type: none"> • Calculator skills • Index laws • Significant Figures • Maps & Bearings • Ratio, Enlargement 	<ul style="list-style-type: none"> • Negative numbers 	<ul style="list-style-type: none"> • Proportion • Standard form • Plans and elevations • Fractions, decimals & percentages 	<ul style="list-style-type: none"> • Data presentation 	<ul style="list-style-type: none"> • Volume • Percentage increase and decrease • Speed • Financial maths 	<ul style="list-style-type: none"> • Experimental probability • Bletchley Park / Code breaking

Mass Practice	Exit ticket / topic test completed a minimum of a week after topic completion for all topics (see Appendix A & B). These may be completed in topic pairs to reduce teacher workload. Exit tickets will be used as formative assessment, marked by class teachers and given detailed feedback, with dedicated time for student reflection / improvement. These will not be graded as topics in maths are no longer categorised by grade, but will instead be measured against the expected outcomes for a topic.
Distributed Practice	Topics are revisited in DNAs on a cycle. Each week there will be at least 1 DNA that takes the form of "last lesson, last week, last month" to encourage recall and revisiting of topics (see Appendix C). In addition to this, topics are often revisited when they link to new topics or when the unit is revisited for further development later in the PoS. (see Appendix D) All year groups will have at least 3 assessment points in the year which will be cumulative of content as the year progresses.
What are the key concepts to be covered?	<ul style="list-style-type: none"> • Apply the four operations with negative numbers • Convert numbers into standard form and vice versa • Apply the multiplication, division, and power laws of indices • Convert between terminating decimals and fractions • Find a relevant multiplier when solving problems involving proportion • Solve problems involving percentage change, including original value problems • Factorise an expression by taking out common factors • Change the subject of a formula when two steps are required • Find and use the nth term for a linear sequence • Solve linear equations with unknowns on both sides • Plot and interpret graphs of linear functions • Apply the formulae for circumference and area of a circle • Calculate theoretical probabilities for single events
What knowledge do they need to have a successful start to Year 9?	<ul style="list-style-type: none"> • Know how to write a number as a product of its prime factors • Know how to round to significant figures • Know the order of operations including powers • Know how to enter negative numbers into a calculator • Know that $a^0 = 1$ • Know percentage and decimal equivalents for fractions with a denominator of 3, 5, 8 and 10 • Know the characteristic shape of a graph of a quadratic function • Know how to measure and write bearings • Know how to identify alternate angles • Know how to identify corresponding angles • Know how to find the angle sum of any polygon • Know that circumference = $2\pi r = \pi d$ • Know that area of a circle = πr^2 • Know that volume of prism = area of cross-section \times length • Know to use the midpoints of groups to estimate the mean of a set of grouped data • Know that probability is measured on a 0-1 scale • Know that the sum of all probabilities for a single event is 1

	How are topics spaced between unrelated topics?	Units are split up throughout the year, previous topics from a unit should be recapped when beginning the next topics (usually they form pre-requisites for the next topic). (see Appendix D)					
9	Unit/Topic	1.1 Powers & Roots (3) 3.1 Quadratics (6) 1.3 Rounding & Bounds (3) 2.1 Constructions (4) 4.2 Ratio (5) 2.2 Loci (3)	11 Probability (8) 5 Non-Linear Sequences (7) 7.1 Perimeter, Area, Volume (6)	4.1 Proportion (5) 7.2 Pythagoras (4) 1.2 Standard Form (8) 2.3 Plans & Elevations (3)	9.1 Linear Graphs (8) 12 Graphs & Charts (8)	6 Linear Inequalities (8) 4.3 Compound Measures (7) 9.2 Non-Linear Graphs (6)	3.2 Argument & Proof (4) 8 Geometric Proof (7) 10 Simultaneous Equations (10)
	KS3 NC covered	N5, N7, N13, N14, N15, A1, A2, A3, A4, G3, G4, R2, R3, R4, R5, R6, R7	A13, A14, A15, G15, P1, P2, P3,	N8, R9, G13, G15	A7, A8, A9, A10, A12, S1, S2, S3	A2, A9, A11, A12, R10	G7, G13, A4, A5
	Powerful Knowledge	<ul style="list-style-type: none"> Rounding & bounds Constructions 	<ul style="list-style-type: none"> Perimeter, area & volume 	<ul style="list-style-type: none"> Proportion Pythagoras' Theorem Standard Form Plans & Elevations 	<ul style="list-style-type: none"> Graphs & Charts 	<ul style="list-style-type: none"> Compound measures Non-linear graphs 	<ul style="list-style-type: none"> Argument and proof
	Mass Practice	Exit ticket / topic test completed a minimum of a week after topic completion for all topics (see Appendix A & B). These may be completed in topic pairs to reduce teacher workload. Exit tickets will be used as formative assessment, marked by class teachers and given detailed feedback, with dedicated time for student reflection / improvement. These will not be graded as topics in maths are no longer categorised by grade, but will instead be measured against the expected outcomes for a topic.					
	Distributed Practice	Topics are revisited in DNAs on a cycle. Each week there will be at least 1 DNA that takes the form of "last lesson, last week, last month" to encourage recall and revisiting of topics (see Appendix C). In addition to this, topics are often revisited when they link to new topics or when the unit is revisited for further development later in the PoS. (see Appendix D) All year groups will have at least 3 assessment points in the year which will be cumulative of content as the year progresses.					

<p>What are the key concepts to be covered?</p>	<ul style="list-style-type: none"> • Manipulate algebraic expressions by expanding the product of two binomials • Manipulate algebraic expressions by factorising a quadratic expression of the form $x^2 + bx + c$ • Understand and use the gradient of a straight line to solve problems • Solve two linear simultaneous equations algebraically and graphically • Plot and interpret graphs of quadratic functions • Change freely between compound units • Use ruler and compass methods to construct the perpendicular bisector of a line segment and to bisect an angle • Solve problems involving similar shapes • Calculate exactly with multiples of π • Apply Pythagoras' theorem in two dimensions • Use geometrical reasoning to construct simple proofs • Use tree diagrams to list outcomes
<p>What knowledge do they need to have a successful start to Year 10?</p>	<ul style="list-style-type: none"> • Know how to interpret the display on a scientific calculator when working with standard form • Know the difference between direct and inverse proportion • Know how to represent an inequality on a number line • Know that the point of intersection of two lines represents the solution to the corresponding simultaneous equations • Know the meaning of a quadratic sequence • Know the characteristic shape of the graph of a cubic function • Know the characteristic shape of the graph of a reciprocal function • Know the definition of speed • Know the definition of density • Know the definition of pressure • Know Pythagoras' theorem • Know the definitions of arc, sector, tangent and segment • Know the conditions for congruent triangles
<p>How are topics spaced between unrelated topics?</p>	<p>Units are split up throughout the year where possible. Previous topics from a unit should be recapped when beginning the next topics (usually they form pre-requisites for the next topic). (see Appendix D)</p>

IMPLEMENTATION – STUDENT NEEDS AND SUPPORT

How is student learning supported below so as to ensure the following:

- extracurricular/career opportunities which develop social and cultural capital
- key vocabulary, reading, writing and numeracy opportunities
- support for SEND and students with Low Prior Attainment, as well as challenge for students with High Prior Attainment

YEAR	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	
7	Social/ Cultural Capital	Social capital will be built through class dynamics, where teachers create a safe learning environment, where students feel comfortable in sharing their knowledge, suggestions and solutions. Students will also gain social capital through group work and project work, such as team games and class competitions. It is expected that all staff in the maths department will create a culture of community in their classroom and foster an attitude of learning as a group/team who work together to achieve a common goal. Cultural capital will be built by exploring powerful knowledge in the relevant topics (these are highlighted above and also on the SOWs). Students will be encouraged to explore how the mathematics is used in real life, and given opportunities to explore the contextual problems associated with the mathematics to build their understanding of its importance in life and society. Students will be encouraged to engage with pop culture references to mathematics and may have discussions with their class teacher about how maths has had an impact on their life experiences. In addition to this, students in Year 7 will have the opportunity to qualify to compete the in UK Maths challenge.					
	Tier 2/3 Vocabulary	Students will experience direct explicit vocabulary teaching in most maths lessons. This may be through discussion, copying of definitions, knowledge recall tasks, spelling tests or the use of Frayer models (see appendix H). This will usually focus on key language for a topic (Tier 3 vocabulary) or command words (Tier 2 vocabulary). Command words are exemplified in the Teachers Guide to Exam Command Words produced by Edexcel (appendix F). All units of work include a specific list of language that is associated with that unit (Tier 3, see Appendix D) At least 1 literacy display in department (corridor) and aim to put up other literacy walls/displays in most classrooms (over half)					
	Reading	Students will be given chances to read aloud and read to themselves in lessons when experiencing worded problems, investigations or activities that require students to unpick the information provided. This will be regularly modelled by the class teacher and will include work on comprehension through metacognition and unpicking problems to find out the key information and the command of the question/task.					
	Writing	All students will be required to use full sentences when writing definitions and in some cases when responding to questions or tasks (especially if they are asked to predict or make conjectures). Sometimes students will be encouraged to write in bullet points. Literacy might be “live marked” in lessons by the teacher, or highlighted for correction on their marked pieces of work. The main focus will be on key language specific to maths, but other errors may also be highlighted. Staff will be encouraged to check literacy in all lessons when circulating to support students. Incorrect spellings of key words will be clearly marked in purple pen and students will be asked to rectify this in green pen, with help if required. This should be common practice in most lessons, but may be more evident in lessons where students have written key definitions or are exploring reasoning topics / tasks.					
	Numeracy	Fluency with basic number skills will be practiced throughout the year, with a particular focus upon entry to Year 7 to bridge the gap from primary to secondary (loss of learning over summer period). Real world applications and skills will be explored where they link to the topics studied. Year 7 have dedicated time to explore time which is vital in adulthood. Students will take part in activities involving numeracy during lessons on National Numeracy Day and World Maths Day, as well as numeracy starters shared for religious festivals.					

<p>How does the PoS support students with SEND needs?</p>	<p>SEN students will be provided with any concessions required and individual support where necessary. Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>SEND department have an intervention room to support lowest ability students to close the gap with key maths skills such as calculation methods and telling the time, etc.</p> <p>One member of the maths team will be nominated as a SEN rep to engage with SEND department and share strategies and techniques for teaching and supporting SEN students</p> <p>All staff to have seating plans with SEND students clearly marked as well as class teacher folder with SEND passports and support plans. All staff are expected to know the needs of their students and to be using the strategies highlighted on the passports to best support them</p> <p>Lessons will be differentiated based on the needs of the students so that all students of all abilities and needs can access the main schemes of learning and outcomes. This may include scaffolding, use of signposting and set structures in lessons, labelling of resources, dual coding of key vocabulary with pictures, chunking of lessons, instructions provided verbally and written (with bullet points or numbered where possible), use of mnemonics, stories, cartoon strips and highlighting.</p> <p>Retrieval practice built into the SOLs to foster long term memory and recall.</p> <p>Spiral curriculum design (learning small amounts in lots of areas each year to build towards a final goal) is beneficial for SEND students to support retrieval and reduce overloading</p> <p>Specific fonts are used in planning to better support students with sensory needs and Autism to reduce cognitive overload (Century Gothic, Gill Sans, Arial – coordinated with English)</p>
<p>How does the PoS support students with low prior attainment/challenge those with high prior attainment?</p>	<p>Students who join in Year 7 with below expected standard at Year 6 SATs will be supported with a foundation version of PoS which supports students to fill gaps in knowledge and skills from primary school. This is with the view that by the time they reach Year 11 they will have covered all foundation tier GCSE content and should be aiming for grades 4+ (Progress of this group will be closely monitored throughout to ensure ambitions and outcomes are not limited. Nature of the SOL is designed as a "spiral" progression where each area is developed in small chunks across the 5 years and it may be possible at times to use a blend of the foundation and mainstream SOLs when teaching this group to reduce the gaps in knowledge)</p> <p>Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>PoS is designed to stretch HPA students by aiming to have the majority of students sitting the higher tier GCSE aiming for grades 6+</p> <p>Challenge tasks will be available in every lesson for all students but HPA students will be actively encouraged to engage with these (see Appendix G)</p>

	<p>How does the PoS offer contextual content appropriate to Amington students?</p>	<p>Based on contextual information from 2018 for Staffordshire (Appendix E)</p> <ul style="list-style-type: none"> • Increased financial stress experienced – PoS looks to explore finances in multiple topics (negative numbers, percentages, decimals) and students will be encouraged to explore these with financial sense and knowledge to better prepare them for adulthood • Less residents from ethnic minorities – PoS and numeracy policy will develop knowledge of other cultures and religions by doing numeracy related activities to coincide with these events (eg Diwali, Ramadan) • Nearly half of students in Tamworth do not get pass in maths & English – PoS designed for full coverage by Year 11 and support in place for students with the highest needs to attain a 4+ by the end of Year 11 • Over 10% of the local population have no qualifications – Entry Level will be offered to students with the highest needs and lowest prior attainment to be able to gain a maths equivalent qualification which is more accessible (in addition to GCSE maths) • 3% of 16-24 year olds claim unemployment benefits – students will be encouraged to explore how maths relates to careers of all varieties and supported in developing transferable skills to boost success in obtaining a job after leaving school. • Over 20% of the local population do not have private transport – students will be taught how to read timetables for local bus companies and plan their journeys using local available public transport, taking into account the costs 	
<p>8</p>	<p>Social/ Cultural Capital</p>	<p>Social capital will be built through class dynamics, where teachers create a safe learning environment, where students feel comfortable in sharing their knowledge, suggestions and solutions. Students will also gain social capital through group work and project work, such as team games and class competitions. It is expected that all staff in the maths department will create a culture of community in their classroom and foster an attitude of learning as a group/team who work together to achieve a common goal.</p> <p>Cultural capital will be built by exploring powerful knowledge in the relevant topics (these are highlighted above and also on the SOWs). Students will be encouraged to explore how the mathematics is used in real life and given opportunities to explore the contextual problems associated with the mathematics to build their understanding of its importance in life and society. Students will be encouraged to engage with pop culture references to mathematics and may have discussions with their class teacher about how maths has had an impact on their life experiences. In addition to this, students in Year 8 will have the opportunity to qualify to compete the in UK Maths challenge, and to join a club focusing on the UK Team Maths challenge, with the opportunity to be picked to take part in a regional qualifier.</p>	<p>Trip to Bletchley Park to build cultural capital as well as problem solving skills, references to WW2, computing, team work</p> <p>Projects to include code breaking activities and encryption using paper Enigma machines</p>
	<p>Tier 2/3 Vocabulary</p>	<p>Students will experience direct explicit vocabulary teaching in most maths lessons. This may be through discussion, copying of definitions, knowledge recall tasks, spelling tests or the use of Frayer models (see Appendix G). This will usually focus on key language for a topic (Tier 3 vocabulary) or command words (Tier 2 vocabulary). Command words are exemplified in the Teachers Guide to Exam Command Words produced by Edexcel (see appendix F).</p> <p>All units of work include a specific list of language that is associated with that unit (Tier 3, see Appendix D)</p> <p>At least 1 literacy display in department (corridor) and aim to put up other literacy walls/displays in most classrooms (over half)</p>	
	<p>Reading</p>	<p>Students will be given chances to read aloud and read to themselves in lessons when experiencing worded problems, investigations or activities that require students to unpick the information provided. This will be regularly modelled by the class teacher and will include work on comprehension through metacognition and unpicking problems to find out the key information and the command of the question/task.</p>	

Writing	All students will be required to use full sentences when writing definitions and, in some cases, when responding to questions or tasks (especially if they are asked to predict or make conjectures). Sometimes students will be encouraged to write in bullet points. Literacy might be "live marked" in lessons by the teacher or highlighted for correction on their marked pieces of work. The focus will be on key language specific to maths, but other errors may also be highlighted. Staff will be encouraged to check literacy in all lessons when circulating to support students. Incorrect spellings of key words will be clearly marked in purple pen and students will be asked to rectify this in green pen, with help if required. This should be common practice in most lessons, but may be more evident in lessons where students have written key definitions or are exploring reasoning topics / tasks.
Numeracy	Fluency with basic number skills will be practiced throughout the year, with a particular focus upon entry to Year 8 to bridge the gap from loss of learning over summer period. Real world applications and skills will be explored where they link to the topics studied. Year 8 have dedicated time to explore proportion which can be linked to a range of skills in real life, but makes clear links with recipes and cooking. Students will take part in activities involving numeracy during lessons on National Numeracy Day and World Maths Day, as well as numeracy starters shared for religious festivals.
How does the PoS support students with SEND needs?	<p>SEN students will be provided with any concessions required and individual support where necessary. Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>SEND department have an intervention room to support lowest ability students to close the gap with key maths skills such as calculation methods and telling the time, etc.</p> <p>One member of the maths team will be nominated as a SEN rep to engage with SEND department and share strategies and techniques for teaching and supporting SEN students</p> <p>All staff to have seating plans with SEND students clearly marked as well as class teacher folder with SEND passports and support plans. All staff are expected to know the needs of their students and to be using the strategies highlighted on the passports to best support them</p> <p>Lessons will be differentiated based on the needs of the students so that all students of all abilities and needs can access the main schemes of learning and outcomes. This may include scaffolding, use of signposting and set structures in lessons, labelling of resources, dual coding of key vocabulary with pictures, chunking of lessons, instructions provided verbally and written (with bullet points or numbered where possible), use of mnemonics, stories, cartoon strips and highlighting.</p> <p>Retrieval practice built into the SOLs to foster long term memory and recall.</p> <p>Spiral curriculum design (learning small amounts in lots of areas each year to build towards a final goal) is beneficial for SEND students to support retrieval and reduce overloading</p> <p>Specific fonts are used in planning to better support students with sensory needs and Autism to reduce cognitive overload (Century Gothic, Gill Sans, Arial – coordinated with English)</p>

<p>How does the PoS support students with low prior attainment/challenge those with high prior attainment?</p>	<p>Students who join in Year 7 with below expected standard at Year 6 SATs will be supported with a foundation version of PoS which supports students to fill gaps in knowledge and skills from primary school and as they move into Year 8 will move on to studying the Year 7 PoS. This is with the view that by the time they reach Year 11 they will have covered all foundation tier GCSE content and should be aiming for grades 4+ (Progress of this group will be closely monitored throughout to ensure ambitions and outcomes are not limited. Nature of the SOL is designed as a "spiral" progression where each area is developed in small chunks across the 5 years and it may be possible at times to use a blend of the foundation and mainstream SOLs when teaching this group to reduce the gaps in knowledge)</p> <p>Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>PoS is designed to stretch HPA students by aiming to have the majority of students sitting the higher tier GCSE aiming for grades 6+</p> <p>Challenge tasks will be available in every lesson for all students but HPA students will be actively encouraged to engage with these (see Appendix G)</p>
<p>How does the PoS offer contextual content appropriate to Amington students?</p>	<p>Based on contextual information from 2018 for Staffordshire (Appendix E)</p> <ul style="list-style-type: none"> • Increased financial stress experienced – PoS looks to explore finances in multiple topics (negative numbers, percentages, decimals) and students will be encouraged to explore these with financial sense and knowledge to better prepare them for adulthood. Particular time is spent in Year 8 focusing on the use of percentages for financial reasons, which will also include looking at bank accounts, interest rates, mortgages and income taxes. • Less residents from ethnic minorities – PoS and numeracy policy will develop knowledge of other cultures and religions by doing numeracy related activities to coincide with these events (eg Diwali, Ramadan) • Nearly half of students in Tamworth do not get pass in maths & English – PoS designed for full coverage by Year 11 and support in place for students with the highest needs to attain a 4+ by the end of Year 11 • Over 10% of the local population have no qualifications – Entry Level will be offered to students with the highest needs and lowest prior attainment to be able to gain a maths equivalent qualification which is more accessible (in addition to GCSE maths) • 3% of 16-24 year olds claim unemployment benefits – students will be encouraged to explore how maths relates to careers of all varieties and supported in developing transferable skills to boost success in obtaining a job after leaving school. • Over 20% of the local population do not have private transport – students will be taught how to compare prices of public transport journeys and select a route / ticketing option that minimises expenditure and maximises savings

9	Social/ Cultural Capital	<p>Social capital will be built through class dynamics, where teachers create a safe learning environment, where students feel comfortable in sharing their knowledge, suggestions and solutions. Students will also gain social capital through group work and project work, such as team games and class competitions. It is expected that all staff in the maths department will create a culture of community in their classroom and foster an attitude of learning as a group/team who work together to achieve a common goal.</p> <p>Cultural capital will be built by exploring powerful knowledge in the relevant topics (these are highlighted above and also on the SOWs). Students will be encouraged to explore how the mathematics is used in real life, and given opportunities to explore the contextual problems associated with the mathematics to build their understanding of its importance in life and society. Students will be encouraged to engage with pop culture references to mathematics and may have discussions with their class teacher about how maths has had an impact on their life experiences. In addition to this, students in Year 9 will have the opportunity to qualify to compete in the UK Maths challenge, and to join a club focusing on the UK Team Maths challenge, with the opportunity to be picked to take part in a regional qualifier.</p> <p style="color: red;">Year 9 girls will be invited to take part in Maths 4 Girls twice in the year. Local businesswomen will come and talk about how maths has impacted their lives and their careers and show girls that they can be successful / can take maths further than GCSEs</p> <p style="color: red;">All Year 9 students will be invited to 2 talks from local businesspeople about their careers and lives to encourage students to believe in themselves, as well as start to identify career opportunities and pathways for themselves.</p>
	Tier 2/3 Vocabulary	<p>Students will experience direct explicit vocabulary teaching in most maths lessons. This may be through discussion, copying of definitions, knowledge recall tasks, spelling tests or the use of Frayer models (see Appendix G). This will usually focus on key language for a topic (Tier 3 vocabulary) or command words (Tier 2 vocabulary). Command words are exemplified in the Teachers Guide to Exam Command Words produced by Edexcel (see appendix F).</p> <p>All units of work include a specific list of language that is associated with that unit (Tier 3, see Appendix D)</p> <p style="color: red;">At least 1 literacy display in department (corridor) and aim to put up other literacy walls/displays in most classrooms (over half)</p>
	Reading	<p>Students will be given chances to read aloud and read to themselves in lessons when experiencing worded problems, investigations or activities that require students to unpick the information provided. This will be regularly modelled by the class teacher and will include work on comprehension through metacognition and unpicking problems to find out the key information and the command of the question/task.</p>
	Writing	<p>All students will be required to use full sentences when writing definitions and in some cases when responding to questions or tasks (especially if they are asked to predict or make conjectures). Sometimes students will be encouraged to write in bullet points. Literacy might be "live marked" in lessons by the teacher, or highlighted for correction on their marked pieces of work. The main focus will be on key language specific to maths, but other errors may also be highlighted. Staff will be encouraged to check literacy in all lessons when circulating to support students. Incorrect spellings of key words will be clearly marked in purple pen and students will be asked to rectify this in green pen, with help if required. This should be common practice in most lessons, but may be more evident in lessons where students have written key definitions or are exploring reasoning topics / tasks.</p>
	Numeracy	<p>Fluency with basic number skills will be practiced throughout the year, with a particular focus upon entry to Year 9 to bridge the gap from primary to secondary (loss of learning over summer period). Real world applications and skills will be explored where they link to the topics studied.</p> <p>Students will take part in activities involving numeracy during lessons on National Numeracy Day and World Maths Day, as well as numeracy starters shared for religious festivals.</p>

<p>How does the PoS support students with SEND needs?</p>	<p>SEN students will be provided with any concessions required and individual support where necessary. Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>SEND department have an intervention room to support lowest ability students to close the gap with key maths skills such as calculation methods and telling the time, etc.</p> <p>One member of the maths team will be nominated as a SEN rep to engage with SEND department and share strategies and techniques for teaching and supporting SEN students</p> <p>All staff to have seating plans with SEND students clearly marked as well as class teacher folder with SEND passports and support plans. All staff are expected to know the needs of their students and to be using the strategies highlighted on the passports to best support them</p> <p>Lessons will be differentiated based on the needs of the students so that all students of all abilities and needs can access the main schemes of learning and outcomes. This may include scaffolding, use of signposting and set structures in lessons, labelling of resources, dual coding of key vocabulary with pictures, chunking of lessons, instructions provided verbally and written (with bullet points or numbered where possible), use of mnemonics, stories, cartoon strips and highlighting.</p> <p>Retrieval practice built into the SOLs to foster long term memory and recall.</p> <p>Spiral curriculum design (learning small amounts in lots of areas each year to build towards a final goal) is beneficial for SEND students to support retrieval and reduce overloading</p> <p>Specific fonts are used in planning to better support students with sensory needs and Autism to reduce cognitive overload (Century Gothic, Gill Sans, Arial – coordinated with English)</p>
<p>How does the PoS support students with low prior attainment/challenge those with high prior attainment?</p>	<p>Students who join in Year 7 with below expected standard at Year 6 SATs will be supported with a foundation version of PoS which supports students to fill gaps in knowledge and skills from primary school and as they move into Year 9 will move on to studying the Year 8 PoS. This is with the view that by the time they reach Year 11 they will have covered all foundation tier GCSE content and should be aiming for grades 4+ (Progress of this group will be closely monitored throughout to ensure ambitions and outcomes are not limited. Nature of the SOL is designed as a "spiral" progression where each area is developed in small chunks across the 5 years and it may be possible at times to use a blend of the foundation and mainstream SOLs when teaching this group to reduce the gaps in knowledge)</p> <p>Where possible, KS3 catch up interventions may be offered during tutor time to support students with the highest needs to catch up and be able to access the main PoS</p> <p>PoS is designed to stretch HPA students by aiming to have the majority of students sitting the higher tier GCSE aiming for grades 6+</p> <p>Challenge tasks will be available in every lesson for all students but HPA students will be actively encouraged to engage with these (see Appendix G)</p>

<p>How does the PoS offer contextual content appropriate to Amington students?</p>	<p>Based on contextual information from 2018 for Staffordshire (Appendix C)</p> <ul style="list-style-type: none"> • Increased financial stress experienced – PoS looks to explore finances in multiple topics (negative numbers, percentages, decimals) and students will be encouraged to explore these with financial sense and knowledge to better prepare them for adulthood. Particular time is spent in Year 9 focusing on the use of percentages for financial reasons, which will also include looking at bank accounts, interest rates, mortgages, income taxes, loans and student finance. • Less residents from ethnic minorities – PoS and numeracy policy will develop knowledge of other cultures and religions by doing numeracy related activities to coincide with these events (eg Diwali, Ramadan) • Nearly half of students in Tamworth do not get pass in maths & English – PoS designed for full coverage by Year 11 and support in place for students with the highest needs to attain a 4+ by the end of Year 11; exam practice for GCSE starts in Year 9, with testing using past GCSE papers to develop exam techniques and familiarity • Over 10% of the local population have no qualifications – Entry Level will be offered to students with the highest needs and lowest prior attainment to be able to gain a maths equivalent qualification which is more accessible (in addition to GCSE maths); Maths 4 Girls, and Founders 4 Schools used to boost the profile of maths as a useful qualification • 3% of 16-24-year olds claim unemployment benefits – students will be encouraged to explore how maths relates to careers of all varieties and supported in developing transferable skills to boost success in obtaining a job after leaving school. Maths 4 Girls and Founders 4 Schools used to boost the knowledge around key skills for employment and success in business • Over 20% of the local population do not have private transport – students will be taught how to compare prices of public transport journeys and select a route / ticketing option that minimises expenditure and maximises savings
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How does the Implementation Plan meet the ACE curriculum design?

<p>Ambitious</p>	<ul style="list-style-type: none"> • Aiming for a majority sitting Higher tier, aiming for 6+ • Support for LPA students to aim for a GCSE 4+ by providing support in filling gaps in knowledge • Looks to include additional elements on top of SOL objectives in all lessons in all year groups
<p>Challenging</p>	<ul style="list-style-type: none"> • Students challenged to study in a way that leads to Higher tier entry at GCSE • Challenge work will be provided in all lessons • Problem solving and abstract applications will be used where possible • HPA students have access to UK Maths Challenge competitions (aimed at highest achievers in Maths nationally)
<p>Engaging</p>	<ul style="list-style-type: none"> • Real life links included where possible • Additional opportunities are planned to coincide with national and local events • A range of activities used to consolidate, revisit and assess • Enrichment activities built into SOW

What are the current strengths of the Implementation Plan?

The curriculum is ambitious in its design by aiming for higher GCSE entries for the majority (although these will be considered on a case by case basis in Year 11, and suitability of the curriculum for each teaching group will be reviewed at least twice yearly). It has taken into account research around developing a curriculum to support memory by utilising interleaving and spaced learning. It features a range of opportunities to enrich and explore cultural and societal links






What specific actions have to be taken in response to the above? Please consider:


- Core concept changes;
 - Space interleaving changes;
 - Modifications to ensure an ACE curriculum design;
 - CPD for teachers in your subject area;
 - Additional research you have to consider as part of this review.
- Units (where appropriate) have been broken down into smaller chunks to allow spacing and interleaving
 - The 5 areas of maths are interleaved throughout the year (number, geometry & measure, algebra, proportional reasoning, data & statistics)
 - CPD focus (appendix I and J)
 - Blocking, spacing, interleaving and discrimination teaching – what is it, what are the differences, how to teach for discrimination, links to metacognition (Mon 15th June + revisit in Sept 2020)
 - Literacy – training on metacognition, how to teach reading for comprehension, using Frayer Models, teaching command words (dept. tasks w/c 6th July + revisit in Sept 2020)
 - Retrieval practice – how to quiz **knowledge** and **facts**; spacing practice through DNAs (Mon 22nd June)
 - Formative assessment practices – making your own exit tickets and topic check ups (dept. tasks w/c 22nd June)
 - Metacognition – effective teaching strategies (Mon 6th July)
 - Meeting calendar and CPD to be planned in advance (ideally created and shared with JPM before summer holiday)
 - SEND focus
 - Member of team to be selected as SEND rep
 - CLA to arrange to liaise with Alison Campbell regarding SEND techniques and support within maths (timetabling of LSAs, use of intervention)
 - CLA to arrange to liaise with Alison Campbell regarding the use of LSA's in maths & possible CPD around numeracy and strategies
 - Meeting arranged 10am Thurs 11th June
 - Classrooms to be reorganised and tidied with clear expectations on cleanliness and tidiness
 - Classroom resources to be clearly labelled and dual coded – especially if key equipment
 - Maths staff to attend SEND training when provided
 - Maths staff to have "Class Teacher folder" for groups with seating plan, SEND support plans and SEND passports
 - QA to have SEND focus in at least 1 data capture per year per teacher
 - Discuss with AND, JPM & RAC possible use of RAC for "recovery" work with Year 11 (2020-21)
 - Maths staff to plan for use of LSAs in lessons and communicate regularly with LSAs
 - CLA to investigate possibility for Maths-SEND briefing once per Term
 - Primary Liaison
 - CLA, LEG and ANP to look into ways of working with main 7-8 feeder primaries (in the first instance) to support them in teaching maths and create a 2-way dichotomy for support and sharing good practice
 - CLA, LEG and ANP to investigate possibility of visits to primaries (or use of remote software) to observe Year 6 lessons and work with primaries to build continuity from KS2 to KS3
 - CLA, LEG and ANP to investigate potential use of Remote Working to deliver lessons to Year 6 as part of transition
 - CLA to arrange first contact in September (due to current situation and pressures on primaries)
 - Policies & Handbooks
 - **Literacy policy** to be written and to include examples of Tier 2 and 3 vocabulary and teaching strategies to support literacy
 - **Numeracy policy** to be written and to include clear indicators of whole school opportunities and how staff CPD can be utilised
 - **Enrichment policy** to be written and included in dept. handbook. Responsibilities to be assigned to LEG and ANP for organising enrichment
 - Handbook to be shared with department before the end of the summer term






- Cultural Capital
 - Detailed planning and approval required for Year 8 Bletchley Park trip
 - Organisation of Maths 4 Girls and Founders 4 Schools talks (Year 9 & 10)
 - Organisation of UK Maths Challenges
 - Organisation and hosting of Team Maths Challenge club (in preparation for the UK Team Maths Challenge)
 - Explore other options for extra curricular opportunities / clubs within maths (RAC possibly)
 - Shared starters designed for Diwali, Easter and other religious festivals & shared whole school to be DNA for each of the 5 sessions
 - Shared starters / tutor time activities designed and distributed whole school for National Numeracy Day and World Maths Day
- Data Analysis
 - QLA analysis to be completed regularly with Year 10 and 11 to allow refinements in SOL to prioritise the needs of students in our specific context through the 5-year PoS (initiate in Sept. with data analysis to follow and adjustments to be made following this)
 - Staff training on using QLA and importance of QLA for personalised learning for students and classes (September 2020)

Appendices

Appendix A – Examples of Exit Tickets

Exit Ticket	
Name:	Factorising
Factorise:	
(a) $3y + 15$	
(b) $18x - 12$	
(c) $4x^2 + 8x$	
Challenge:	
(d) $10c^3 - 20c^2 + 5c$	
How I feel about this work:	
<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>	

<input type="checkbox"/> I can factorise with positive numbers and a common numerical factor 
<input type="checkbox"/> I can factorise with negative numbers involved
<input type="checkbox"/> I can factorise with an algebraic common factor
<input type="checkbox"/> I can factorise with more than 2 terms
<input type="checkbox"/> I can factorise with an algebraic and numerical common factor

Exit Ticket	
Name:	Frequency Trees
80 people were asked which channel they preferred to watch. 7 of the 20 males said Channel 4 8 males and 12 females said BBC1 28 females said ITV. Draw a frequency tree using this information	
Challenge: What fraction of the females picked Channel 4?	
How I feel about this work:	
<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>	

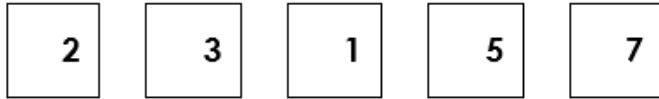
Appendix B – Topic Test Examples

Year 7: Got It?

Autumn Term 1

Week 3

Here are some number cards



- (a) Choose three different cards to make a three-digit prime number

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- (b) Choose three different cards to make a three-digit number that is a multiple of 5

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James says:

“Adding two odd numbers always gives an odd number answer.”

Give an example to show that James is wrong.



Year 7: Got It?

Autumn Term 1

A famous mathematician claimed that:

Every **even** number greater than 4 can be written as the **sum of a pair of prime** numbers.

For example:

8 can be written as the sum of 3 and 5, and 3 and 5 are both prime numbers

- (a) Write a pair of **prime** numbers that **sum to 16**

_____ and _____

- (b) Now write a **different** pair of prime numbers than sum to 16

_____ and _____

- (c) Now choose an **even** number that is **greater than 16**, then write a pair of **prime** numbers that sum to your even number.

Complete the sentences below:

The even number _____ can be written as the sum of the prime numbers _____ and _____.



Do now...

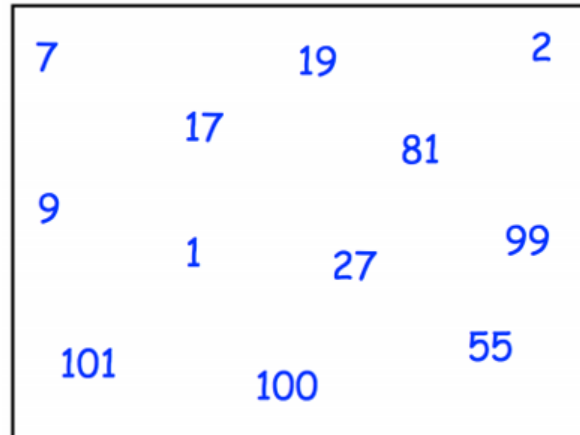
Write down the value of the underlined figure:

52.34

502.4

1.203

20.034



From the box, choose:
 (a) the smallest prime number
 (b) a prime number that is greater than 10
 (c) an even prime number

Write down:

1. All the factors of 64
2. All the factors of 96
3. The highest common factor of 64 and 96

Last lesson

Last week

Last topic

Do now...

Benjamin rolls an ordinary six-sided dice once and flips a coin. List all the possible outcomes.

Solve:

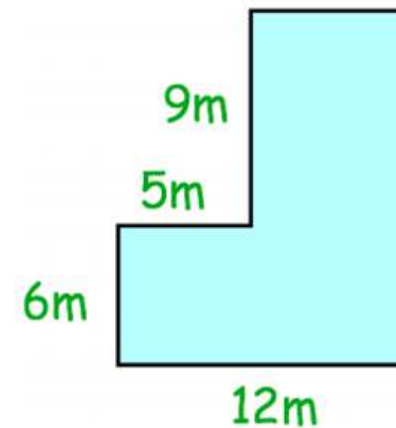
(a) $\frac{x}{3} = 1.5$

(b) $10w - 3 = 45$

(c) $21 = 7 + 4f$

(d) $6x - 3 = 2x + 13$

Work out the area & perimeter of this shape.



Last lesson

Last week

Last month

Appendix D – Scheme of Work Example

Unit 5: Algebra Skills		10 hours
Pre-Requisites <ul style="list-style-type: none"> Know basic algebraic notation (the rules of algebra) Simplify an expression by collecting like terms Know how to multiply a single term over a bracket Substitute positive numbers into expressions and formulae Calculate with negative numbers 		Key Concepts (GCSE subject content statements) <ul style="list-style-type: none"> use and interpret algebraic notation, including: a^2b in place of $a \times a \times b$, coefficients written as fractions rather than as decimals understand and use the concepts and vocabulary of factors simplify and manipulate algebraic expressions by taking out common factors and simplifying expressions involving sums, products and powers, including the laws of indices substitute numerical values into scientific formulae rearrange formulae to change the subject
Mathematical Language Product, Variable, Term, Coefficient, Common factor, Factorise, Power, Indices, Formula, Formulae, Subject, Change the subject		
	Topic 5.1 – Index Laws 4 hours	Topic 5.2 – Algebraic Manipulation 6 hours
Skills to Revisit	Students should be proficient in: <ul style="list-style-type: none"> expanding brackets simplifying expressions such as $a \times a \times a$ 	Students should be proficient in: <ul style="list-style-type: none"> use of the balancing method to solve equations identifying highest common factors simplifying by collecting like terms
Objectives	<ul style="list-style-type: none"> Simplify expressions using the law of indices for multiplication Simplify expressions using the law of indices for division Simplify expressions using the law of indices for powers Know and use the zero index Powerful Knowledge <i>This will link later to compound interest problems (such as loans, savings and interest rates)</i>	<ul style="list-style-type: none"> <i>Use and interpret algebraic notation, including: a^2b in place of $a \times a \times b$, coefficients written as fractions rather than as decimals</i> <i>Simplify an expression involving terms with combinations of variables (e.g. $3a^2b + 4ab^2 + 2a^2 - a^2b$)</i> Factorise an algebraic expression by taking out common factors Substitute positive and negative numbers into formulae Change the subject of a formula when one step is required Change the subject of a formula when two steps are required
Teaching Notes and Probing Questions	<i>Once the laws of indices have been established, all teachers refer to 'like numbers multiplied, add the indices' and 'like numbers divided, subtract the indices. They also generalise to $a^m \times a^n = a^{m+n}$ etc.</i> <ul style="list-style-type: none"> Convince me $a^0 = 1$. What is wrong with this statement and how can it be corrected: $5^2 \times 5^4 = 5^8$? 	During this unit pupils should experience factorising a quadratic expression such as $6x^2 + 2x$. Collaborate with the science department to establish a list of formulae that will be used and ensure consistency of approach and experience. <i>When changing the subject of a formula the principle of balancing (doing the same to both sides) must be used rather than a 'change side, change sign' approach.</i> <ul style="list-style-type: none"> Jenny thinks that if $y = 2x + 1$ then $x = (y - 1)/2$. Kenny thinks that if $y = 2x + 1$ then $x = y/2 - 1$. Who do you agree with? Explain your thinking.
Miscellaneous	<ul style="list-style-type: none"> Many pupils may think that $a^0 = 0$ 	<ul style="list-style-type: none"> Some pupils may misapply the order of operation when changing the subject of a formula Some pupils may not consider $4ab$ and $3ba$ as 'like terms' and therefore will not 'collect' them when simplifying expressions

Appendix E – Local contextual information (compared to England)

Key Features (taken from Stafford: Locality Profile Jan 2018)

- Larger percentage of the population is under 16
- Smaller percentage of the population is from minority ethnic backgrounds
- Over 20% of the population are in the second most deprived groups nationally
- Larger percentage of the population experiences financial stress
- 55% of students achieve A*-C in GCSE Maths & English (or equivalent)
- 12% of adults have no qualifications
- 3% of 16-24 year olds claim unemployment benefits
- 60% of unplanned hospital visits are related to underage alcohol incidents
- 32% of girls 15-17 fall pregnant
- 11% of the adult population experience depression
- Women are more likely to die of alcohol related illness / incidents than men
- Women in our locality are twice as likely than nationally to die of alcohol induced illness / injury
- Lower than average life expectancy at birth (male & female)
- More likely to die of preventable diseases than national average
- Higher than average lone parent homes
- Higher than average levels of social housing
- 2% of the population have no central heating
- 3% of the population live in houses considered overcrowded
- 11% experience fuel poverty
- More than 20% of the population do not have access to private travel means
- More likely to experience crime and to fear crime
- Higher levels of sexual offences, violent crime and domestic violence than national average
- 37.5% of juvenile offenders reoffend

GCSE Maths – Command words table – Teacher guide

Please note that this table is not exhaustive but uses the most commonly used command words.

Command words		What you need to know	Examples
1	Calculate	A calculator and some working will be needed.	Example 1 Example 2 Example 3
2	Change	Usually convert from one unit to another; either using known metric unit conversions or the use of a conversion graph.	Example 1 Example 2 Example 3
3	Complete	Fill in missing values. For example, on a probability tree diagram or a table of values.	Example 1 Example 2 Example 3
4	Describe	Write a sentence that gives the features of the situation. For example, describing a transformation or trend in a graph.	Example 1 Example 2 Example 3
5	Draw	Produce an accurate drawing (unless a sketch is being drawn). For example, draw a graph, draw an accurate elevation of a pyramid.	Example 1 Example 2 Example 3
6	Draw a sketch of... Sketch	Produce a drawing that does not have to be drawn to scale or a graph that is drawn without working out each coordinate. For example, sketch a graph, sketch a cylinder.	Example 1 Example 2 Example 3
7	Expand	Remove brackets.	Example 1
8	Expand and simplify	Remove brackets and then collect like terms.	Example 1 Example 2 Example 3

Appendix G – examples of resources used for challenge questions / tasks

Reasoning

Modify, Interpret, Produce, Collect, Develop, Examine, Predict, Compare, Organise, Deconstruct, Outline, Structure, Integrate, Contrast, Distinguish, Connect, Select, Order, Sub-divide, Break-down, Illustrate, Check, Hypothesise, Critique, Experiment, Judge, Test, Detect, Monitor, Reframe, Order, Compare, Decide, Recommend, Summarise, Convince, Defend, Estimate, Find errors, Predict, Select, Argue, Conclude, Distinguish, Persuade

Does this method always work?

Knowing this, what else can you work out?

Which would be the most efficient method for this question?

Give an example when this method wouldn't work

Why does this method work?

Are the sample responses correct / incorrect? Why

What misconceptions are held here? (sample piece of work)

What mistakes might someone make when answering this question?

Multiple choice answers: which is right, what have they done wrong, what misconceptions held?

Students produce multiple choice answers – justifying incorrect answers/misconceptions

Students write a test on the topic and mark scheme, focusing on where marks would be awarded

How does this link to what you already know? How is it similar / different? How does it extend your knowledge / understanding / why is it important to know?

Produce a learning activity for the topic

Sample responses: what advice would you give this person? What have they done wrong? How would you convince them they're wrong?

Order these best to worst (sample responses)

Always, Sometimes, Never

What would be a good wrong answer?

In all of the numbers below, the digit 6 is worth more than 6 hundredths.

3.6 3.06 3.006 6.23 7.761

True or False?

If it is false, can you change some of the numbers so it is true?

Kayleigh says;

“The more decimal places a number has, the smaller the number is.”

Do you agree? Explain why.

True or False: ***When you multiply a number with 2 decimal places by a whole number, the answer always has more than 2 decimal places.***

Prove it.

Stefan and Tilly are both calculating the answer to $147 \div 4$

Stefan says, “The answer is 36 remainder 3”

Tilly says, “The answer is 36.75”

Who do you agree with?

Explain your answer.

True or False: ***The only number that divides to give an answer with 1 decimal place is 2***

Prove it.

Task: Fill in the blank areas. Then answer the question at the bottom

DEFINITION	CHARACTERISTICS
EXAMPLES 	NON-EXAMPLES

Why are these non-examples?

Task: Fill in the blank areas. Then answer the question in blue

DEFINITION	CHARACTERISTICS <ul style="list-style-type: none">• Any data that isn't numbers• Also called "categorical data" as it sorts the subject of the data into categories. <p>Can you think of any other characteristics?</p>
EXAMPLES	NON-EXAMPLES

Q _____

D _____

Appendix I – outline of CPD for maths staff during remote working

Maths Department Task – Weekly Overviews

Day	Task Outline
Monday 20 th April	Getting to Know You Qs <i>A list of questions to answer so I can get to know you whilst socially distancing</i>
Tuesday 21 st April	Working From Home Reflection Qs <i>A set of questions with logistical follow up and wellbeing checks</i>
Wednesday 22 nd April	Resource Review <i>Q: Where do you go for resources?</i> <i>You will also receive a link to a website to explore</i>
Thursday 23 rd April	Maths Activities <i>You will be sent 3 activities and asked to complete any 2 of them by the end of the day.</i>
Friday 24 th April	<i>No task – wellbeing day</i> <i>Email me with any issues etc.</i>

Day	Task Outline
Monday 27 th April	Reflection <i>Probing questions around the maths activities completed previously</i>
Tuesday 28 th April	Maths Activities <i>You will be sent 3 activities and asked to complete any 2 of them by the end of the day</i>
Wednesday 29 th April	Reflection <i>Probing questions around the maths activities completed previously</i>
Thursday 30 th April	Maths Activities <i>You will be sent 3 activities and asked to complete any 2 of them by the end of the day</i>
Friday 1 st May	Reflection <i>Probing questions around the maths activities completed previously</i>

Day	Task Outline
Monday 4 th May	Evaluation <i>Planned learning episode provided, identify effective features and things that could be improved</i>
Tuesday 5 th May	Evaluation <i>Planned learning episode provided, identify effective features and things that could be improved</i>
Wednesday 6 th May	Evaluation <i>Planned learning episode provided, identify effective features and things that could be improved</i>
Thursday 7 th May	Planning <i>Objective provided, produce a learning episode</i>
Friday 8 th May	Bank Holiday VE Day 75th Anniversary

Day	Task Outline
Monday 11 th May	Planning <i>Objective provided, produce a learning episode</i>
Tuesday 12 th May	Meeting Follow Up <i>Directed task following Monday's meeting</i>
Wednesday 13 th May	Planning <i>Objective provided, produce a learning episode</i>
Thursday 14 th May	Planning <i>Objective provided, produce a learning episode</i>
Friday 15 th May	Planning <i>Objectives provided, produce a series of learning episodes</i>

Day	Task Outline
Monday 18 th May	Planning <i>Continue with Friday's task</i>
Tuesday 19 th May	Literacy Focus <i>Frayer Models</i>
Wednesday 20 th May	Solving Problems <i>Work through a problem & produce an animated worked solution Ppt</i>
Thursday 21 st May	Engaging with Research <i>Watch 2 videos, read an article & answer some questions</i>
Friday 22 nd May	Reflections <i>Answer a few questions based on some of this week's activities</i>

Day	Task Outline
Monday 1 st June	No task
Tuesday 2 nd June	Meeting Follow Up <i>Start to consider how you will assess students in your classes & when</i>
Wednesday 3 rd June	GCSE Exam Qs <i>Do some maths & thinking widely about questions</i>
Thursday 4 th June	Metacognition in Action <i>A novel approach to some questions</i>
Friday 5 th June	Evaluating Student Responses <i>A review of student work and providing feedback</i>

Day	Task Outline
Monday 8 th June	<p>Individual Reflections <i>Prompt Qs to review your practice and development needs</i> <i>Self-RAG for Teaching Standards</i></p>
Tuesday 9 th June	<p>Meeting Follow Up <i>Look through the SOLs shared in Monday's meeting</i> <i>Send Qs/Comments to CLA via email</i></p>
Wednesday 10 th June	<p>Planning <i>Create a sequence overview for a NUMBER topic</i></p>
Thursday 11 th June	<p>Planning <i>Create a sequence overview for a GEOMETRY topic</i></p>
Friday 12 th June	<p>Engaging with Research <i>Watch a video, answer some questions</i></p>

Appendix J – Maths department meeting plan Summer Term 2

Date	Focus	Lead By
8th June	Introducing 2020 KS3 Curriculum	CLA
15th June	Interleaving, Spaced and Blocked Learning & Discrimination Teaching	CLA
22nd June	Retrieval Practice, DNAs, Knowledge vs Skills (Homework Policy?)	CLA
29th June	Introducing 2020 KS4 Curriculum	CLA
6th July	Metacognition	CLA
13th July	TBC	