FRAMEWORK FOR LEARNING

CHS South

CREATIVE	An education where imagination, curiosity and resilience enable us to ignite our learning.
HAPPY	A shared belief that optimism, empathy and responsibility are the foundations for a respectful, safe and inclusive community.
SUCCESSFUL	Individuals who are ready to learn, practise being reflective, and are motivated to become champions.

SUBJECT: Maths

INTENT

"Without mathematics, there's nothing you can do. Everything around you is mathematics. Everything around you is numbers." - **Shakuntala Devi**

Maths is a universal language that explains the world around us. The study of Mathematics enables you to make sense of everyday situations, forge links between topics and establish connections to real life context. Maths fosters curiosity, equipping students with various strategies to tackle problems; it empowers students with resilience to take risks, get it wrong, form a new strategy and start again, with determination and drive to reach the final answer. Maths is logical thinking, reasoning, intuition, analysis, construction, generalisation and beauty.

CHS SOUTH - CURRICULUM - FRAMEWORK FOR LEARNING

YEAR GROUP	YEAR 9
RATIONAL / NARRATIVE	Year 9 is the final year of KS3 where students will consolidate and extend their existing skills gained in Years 7 and 8 with a blend of formal methods complementing the mastery approach to problem solving and reasoning. Students will work on a range of new topics, applying their skills to complex situations and promoting their communication and strategising throughout. Students will become familiar with the formal assessment process and expectations.

TERM	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
KNOWLEDGE	<u>Fractions, decimals and percentages</u> • Fractions/ percentages of amounts. • Calculations with Fractions. • Fractions, Decimals and Percentages. <u>Percentages</u> • Percentages Increase/Decrease. • Percentage Change. • Reverse Percentages. • Simple/Compound Interest. <u>Expressions</u> • Simplifying Expressions. • Indices • Expanding and Factorising (single brackets). • Algebraic Fractions. <u>Handling Data</u> • Sampling. • Organising data.	<u>Handling Data (cont.)</u> • Representing Data. • Averages & spread. <u>Equations and Inequalities</u> • Solving Linear Equations. • Expand/factorise quadratics. • Solving quadratics. • Solving inequalities. • Simultaneous equations. • Rearranging equations. <u>Graphs 1</u> • Drawing straight-line graphs. • Equation of straight line. • Parallel and perpendicular lines.	<u>Graphs 1 (cont.)</u> • Equation of a line from two points. <u>Angles in Polygons</u> • Calculating missing angles: -around a point -in a straight line -in a triangle -in a quadrilateral -in parallel lines • Angle sum in polygons. • Congruence. • Similarity.	<u>Working in 2D</u> • Measuring lengths and angles. • Area of 2D Shapes. • Transformations. • Column vectors. <u>Probability</u> • Theoretical Probability. • Experimental Probability. • Mutually Exclusive Events. • Sample Space. <u>Pythagoras & Intro to Trigonometry</u> • Pythagoras – finding missing lengths.	<u>Pythagoras & Intro to Trigonometry (cont.)</u> • Problem solving with Pythagoras. • Introduction to trig – finding a missing angle. • Trig – finding a missing side. <u>Circles</u> • Circumference. • Area. • Arc length and sector area. <u>Working in 3D</u> • 3D shapes. • Volume of a prism/cylinder. • Surface area of prisms/cylinder. <u>Sequences</u> • Sequence Rules.	<u>Sequences (cont.)</u> • Nth term. • Special Sequences. • Quadratic Sequences. <u>Combined Events (Probability)</u> • Sets. • Frequency trees. • Tree diagrams. Flexi – prep for Year 10 GCSE.
SKILLS	Addition Subtraction Multiplication Division	• Addition • Subtraction • Multiplication • Division	Addition Subtraction Multiplication Division	Multiplication Division Ability to mathematically reason	Recalling and manipulating formulae Substitution Ability to spot patterns	Ability to manipulate fractions. Representing data in various formats.

CHS SOUTH - CURRICULUM - FRAMEWORK FOR LEARNING

ASSESSMENT	FDP Percentage Multipliers Mental Methods Solving multi-step worded problems Pattern recognition Trends and relationships Use of mathematical equipment Ability to mathematically reason	• Solving multi-step worded problems • Mental methods • Use of protractor Proportional reasoning	Simplifying Substitution Reading from axes Drawing and labelling axes Use of mathematical equipment	Use of language in probability Calculator skills Number skills Ability to answer problem-solving questions Recalling and manipulating formulae	Ability to answer problem-solving questions Recall of key formulae	Ability to answer problem-solving questions
	1 x FDP/Percentages assessment 1 x Expressions assessment	1 x Handling data assessment 1 x mid topic Equations & Inequalities assessment 1 x end of topic Equations & Inequalities assessment	1 x Graphs 1 assessment 1 x Spring Progress Test 1 x Angles in polygons assessment	1 x Working in 2D assessment. 1 x Probability assessment	1 x Pythagoras/Trig assessment 1 x Circles assessment	1 x Sequences assessment 1 x Progress test 1 x GL Assessment
HOME LEARNING	Weekly assessments set on Sparx Maths VLE relevant to year 8 summer 2 content	Weekly assessments set on Sparx Maths VLE relevant to previous half term. Sparx - focus on Progress test revision Topics	Sparx - focus on Progress test revision Topics. Weekly assessments set on Sparx Maths VLE relevant to previous half term	Weekly assessments set on Sparx Maths VLE relevant to previous half term.	Weekly assessments set on Sparx Maths VLE relevant to previous half term.	Sparx - focus on Progress test revision Topics. Weekly assessments set on Sparx Maths VLE relevant to previous half term.
READING, WRITING, TALK, NUMERACY	Building Connections: Use visual clues or key words that students could explore in algebra. Read about why we need the concept of infinity and h this relates to natural numbers: 'All About Infinity' https://nrich.maths.org/2756 Pupil task in lessons when converting FDP to explain verbally the difference between each form and ways in which we convert Knowledge Organiser (Expressions) - to read text about a historical	Looking into the financial state of the country currently. Have taxes gone up/down? Why does this impact us as an individual/family/ school? What can we do to ensure we limit any negative impact on ourselves?	Talking though the graphs showing profit and loss. Explaining the importance of a company staying in profit zone and keeping out of the red. Reasoning in angles lessons - always writing supporting statements and reasons for angles in order to meet communication criteria.	Encourage students to be creative by writing their own Pythagoras question and mark scheme and then test their partner. Challenge students to discuss probability outcomes that have zero chance of happening/50% chance of happening/100% chance of happening.	Encourage students to discuss the concepts of over and underestimation and what implications this has in the real world. Oracy Showcase preparation where students are asked to design questions which other students will answer. The author of the question will then mark and justify. Its nearly holiday time – people are now buying foreign currency why is important to monitor this and not just turn up to buy foreign currency.	Revision Summer PT: making flash cards and designing appropriate ways to revise that suit yourself in Maths. Setting up revision notes that are structured and easy to understand/access. Review of the year: either write it in your book, talk it through with a partner or teacher. How has this year gone, what is different next year and what target do you want to achieve next year?

	figure. Muhammad ibn Musa al - Khwarizmi					
TIER 2 VOCABULARY	Identify, annotate, determine	Comment, consider	Determine, identify, annotate	Identify	Sector	Assume
TIER 3 VOCABULARY	Numerator, Denominator, Percent, Compound, Reverse Percentage, Term, Expression, Indices, Roots, Expand, Simplify, Factorise, 'Like' Terms, Sample, Bias, Outlier, Data	Proportion, Average, Mean, Median, Mode, Range, Solve, Equations, Identities, Inequalities, Quadratic, Simultaneous	Parallel, Transversal, Alternate, Corresponding, Co-interior, Vertically opposite, Isosceles, Scalene, Equilateral, Regular, Interior, Exterior, Polygon, Congruent, Similar, Linear, Gradient, Perpendicular, Intercept, Acute, Obtuse, Reflex, Compound, Transformations, Translation, Reflection, Rotation, Enlargement	Vectors, Event, outcome, bias, fair, theoretical probability, experimental probability, mutually exclusive, relative frequency, exhaustive events, sum, product, trials, Hypotenuse, Adjacent, Opposite, Sine, Cosine, Tangent, Trigonometry, Pythagoras	Bounds, Estimate, Approximate, Significant, Area, Circumference, Pi, Arc, Sector, Segment, Chord, Tangent, Radius, Diameter, Circle, Faces, Vertices, Edges, Prism, Pyramid, Cone, Cylinder, Sphere, Surface area	Term, Formula, Quadratic, nth term, Substitute, outcome, dependent, independent, conditional, Sets, Frequency,
PSPSMC, BRITISH VALUES AND DIVERSITY	<u>Cultural</u> Knowledge Organiser – Expressions to read text about an historical figure. Muhammad ibn Musa al – Khwarizmi. <u>Cultural</u> Introduction into percentages including the process over time and decimalisation. <u>Economic Well-being:</u> Handling Data topic intro linked to graphs about UK finances and the financial crash 2006, temperature in UK, Covid cases and military spending by country.	<u>Cultural</u> Inequalities discussion Are we all equal? Yes, we are. Link to Maths and what equality is. Use of symbol in Maths (=). <u>British Values</u> (Data Handling): the representation of historical data <u>Economic Wellbeing:</u> Interest rates, mortgages, tax. <u>Moral</u> Look into the percentage of wealth in companies or countries. Is it fair? Discussing the percentage of a countries wealth that is given as international aid.	<u>Cultural:</u> Encourage students to reflect on where we see angles in real-life. What type of angles are these? What are the most common types of angles that we see? Why is this? <u>Economic Wellbeing:</u> data and equations for the linear graph can be based upon energy prices, bulk buying costs, bank account interest, etc. Students can plot the graphs for two different companies and compare/decide which is cheaper. <u>Social</u> Economic: Topic Intro for Graphs 1 looking at graphs comparing stock	<u>Cultural</u>: Determine a length in a triangle to establish how many Christmas lights need to be purchased. <u>Citizenship and Cultural:</u> Topic intro looks at different religions in the UK and what the probability is of being that religion. From this information looking at the most diverse areas to live in within the UK. Looking specifically at diversity in Manchester and beyond.	<u>Citizenship/ Cultural:</u> Why do we have different units for measurement? Where did they come from? <u>Social:</u> Looking at access to knowledge in previous years and why decimalisation may have helped or hindered some groups of people. What was decimalisation Day? <u>Cultural:</u> Circles and Constructions topic intro - looking at buildings from around the world and how they are built to look like a circle. <u>Economic:</u> Working in 3D and how the world has used this concept for effective marketing.	<u>Economic Wellbeing:</u> Combined events looking at profit and loss. Growth and decay and the effects of the financial markets on the standard of living. Looking at the way cost of living is rising and why that impacts mortgages and loans.

			market to crypto use present day on google.			