Maths Overview – Year 7

Weston Secondary School
ASPIRE • BELIEVE • ACHIEVE

Students receive six hours of maths lessons a fortnight.

	Autumn 1	Autumn 2	Spring 1
Topic(s)	Number: Four operations, number system	Introduction to Algebra	Shape, Area, Perimeter & Angles
Topic Objectives	Develop fluency with the four operations, decimals, negatives and indices; build confidence and accuracy with number.	Introduce algebra from first principles; develop correct notation, layout and solving techniques	Apply number and algebra skills to geometry, develop reasoning and problem solving. -solving.
Acquired Knowledge/Skills	Four operations with decimals Four operations with negatives Column method But stop method BIDMAS Index notation	Writing and simplifying expressions Expanding brackets Factorising expressions Solving equations Rearranging formulae	Area and perimeter of 2D Shapes Area and perimeter of Compound shapes Basic angle facts (straight line, around a point, vertically opposite) Angle reasoning with triangles and quadrilaterals Form and solve equations with algebra – build up from last term
Assessments	Baseline assessment; ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment
Citizenship			

- **PSHE Development: Building resilience –** Accepting challenges and learning from mistakes. Developing problem solving skills – Breaking problems down into smaller steps and thinking logically. Financial skills – Adding/Subtracting/Multiplying/Dividing/Percentages – Skills that students will need going into later life when thinking about budgeting, interest and value for money. Communication and teamwork – Explaining reasoning, listening to other people's methods and solutions. Living in the wider world – Looking at statistics and data, financial literacy and understanding risk. Personal development – Promoting independence, responsibility and fairness.
- **Careers Education:** Pathways into STEM, finance and technical careers. Problem solving skills are based on real life scenarios that people would have. Embedding real world contexts into lessons. Help students understand the importance of maths in everyday life and work
- **Fundamental British Values:** Democracy – Using informed decisions based on evidence and data, Rule of law – Following correct methods (BIDMAS), Individual liberty – Giving students the freedom to express themselves in problem solving questions and discussions, Mutual respect – Listening to other students, understanding that mistakes happen and will support their learning and working collaboratively. Tolerance of faiths and beliefs – Understand that a lot of different cultures contributed to what maths is today e.g. Pythagoras theorem
- **SMSC Development:** Developing logic, developing thinking and reasoning skills through problem solving and class discussion around topics

	Spring 2	Summer 1	Summer 2
Topic(s)	Percentages & Fractions	Typers of numbers & Ratio	Substitution, Fraction, decimals and percentages (FDP) , Probability & Review
Topic Objectives	Consolidate fraction and percentages knowledge.	Develop proportional reasoning; strengthen links between number and algebra. Extend current understanding of factors, multiples and powers	To consolidate core skills in substitution, FDP and probability in preparation for Year 8.

Acquired Knowledge/Skills	Percentages of an amount Percentage increase and decrease Compound interest Reverse percentages Convert between improper fractions and mixed numbers Four operations with fractions (add, subtract, multiply & divide)	Writing a number as the product of its prime factors HCF and LCM Worded problems solving on the above Simplify Ratio Divide an amount in a ratio Relate ratios to fractions	Substituting into an expression and formulae • Use decimals, fractions – prior knowledge form previous terms Drawing linear graphs Converting between FDP Rounding to decimal places & Significant figures Understand the language of probability Experimental and theoretical probability
Assessments	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment
Citizenship	• **PSHE Development:** Building resilience – Accepting challenges and learning from mistakes. Developing problem solving skills – Breaking problems down into smaller steps and thinking logically. Financial skills – Adding/Subtracting/Multiplying/Dividing/Percentages – Skills that students will need going into later life when thinking about budgeting, interest and value for money. Communication and teamwork – Explaining reasoning, listening to other people's methods and solutions. Living in the wider world – Looking at statistics and data, financial literacy and understanding risk. Personal development – Promoting independence, responsibility and fairness. • **Careers Education:** Pathways into STEM, finance and technical careers. Problem solving skills are based on real life scenarios that people would have. Embedding real world contexts into lessons. Help students understand the importance of maths in everyday life and work • **Fundamental British Values:** Democracy – Using informed decisions based on evidence and data, Rule of law – Following correct methods (BIDMAS), Individual liberty – Giving students the freedom to express themselves in problem solving questions and discussions, Mutual respect – Listening to other students, understanding that mistakes happen and will support their learning and working collaboratively. Tolerance of faiths and beliefs – Understand that a lot of different cultures contributed to what maths is today e.g. Pythagoras theorem • **SMSC Development:** Developing logic, developing thinking and reasoning skills through problem solving and class discussion around topics		

Maths Overview – Year 8

	Students receive six hours of maths lessons a fortnight.		
	Autumn 1	**Autumn 2**	**Spring 1**
Topic(s)	Number Fluency – negatives, 4 ops, BIDMAS	Algebra	Area and Perimeter of 2D Shapes Angles and Pythagoras
Topic Objectives	To develop fluency with number skills and apply them to measures and data representations.	To develop fluency in manipulating algebra and solving equations accurately.	To calculate measures in 2D shapes, apply Pythagoras in right-angled triangles and angle rules.
Acquired Knowledge/Skills	Confident use of number operations. • Add, subtract, multiply & divide negatives and decimals BIDMAS - revise and develop number fluency Multiply and divide by 10, 100 and 1000 Standard form introduction • Express numbers in standard form • Understanding place value • Add, subtract, multiply & divide in standard form	Secure algebraic manipulation fluency. • Simplifying and expanding brackets Strong equation solving skills including negatives/fractions. -solving skills including negatives/fractions. • (1-step, 2-step → unknowns both sides) Forming equations and solving • Using shapes – area, perimeter & angles Factorising and solving quadratics. – *new topic* Rearranging equations	Revise area and perimeter of 2D shapes and fluency with compound shapes. • Area and circumference of circles Recap volume and surface area of cuboids Apply Pythagoras using structured steps. • Label, formula, substitute, solve • Finding the hypotenuse and shorter side Similar and congruent shapes

	Revise the above skills in other topics: • Averages – mean, median, mode & range • Frequency trees – two-way tables Surface area and volume of cuboids	• With factorising Simultaneous equations	Revise angle reasoning – straight line, triangles, quadrilaterals, around a point and opposite angles Introduction to angles in parallel lines • Focus on reasoning alternate, corresponding and co-interior
Assessments	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment
Citizenship	• **PSHE Development: Building resilience –** Accepting challenges and learning from mistakes. Developing problem solving skills – Breaking problems down into smaller steps and thinking logically. Financial skills – Adding/Subtracting/Multiplying/Dividing/Percentages – Skills that students will need going into later life when thinking about budgeting, interest and value for money. Communication and teamwork – Explaining reasoning, listening to other people's methods and solutions. Living in the wider world – Looking at statistics and data, financial literacy and understanding risk. Personal development – Promoting independence, responsibility and fairness. • **Careers Education:** Pathways into STEM, finance and technical careers. Problem solving skills are based on real life scenarios that people would have. Embedding real world contexts into lessons. Help students understand the importance of maths in everyday life and work • **Fundamental British Values: Democracy –** Using informed decisions based on evidence and data, Rule of law – Following correct methods (BIDMAS), Individual liberty – Giving students the freedom to express themselves in problem solving questions and discussions, Mutual respect – Listening to other students, understanding that mistakes happen and will support their learning and working collaboratively. Tolerance of faiths and beliefs – Understand that a lot of different cultures contributed to what maths is today e.g. Pythagoras theorem • **SMSC Development:** Developing logic, developing thinking and reasoning skills through problem solving and class discussion around topics		

	Spring 2	Summer 1	Summer 2
Topic(s)	Percentages, Fractions, Unit & Measures	Types of number and Raio	Substitution and statistics
Topic Objectives	To develop fluency with fractions, percentages and number types, applying them to probability and units.	To strengthen understanding with factors, multiples and primes and apply ratio and proportion.	To apply substitution accurately in expressions and equations to solve problems. To collect, represent and interpret data using statistical diagrams and averages.
Acquired Knowledge/Skills	Confident manipulation of percentages • Percentages of amounts • Percentage increase and decreases of amounts • Compound interest and finding the original amount Develop an FDP fluency this involves: • Add, subtract, multiply and divide • Convert improper fractions to mixed numbers • Fractions of amounts Tree diagrams • Helps practice multiplying and adding fractions in context Use metric and basic imperial units.	Understand and define types of numbers • Square, cube and prime numbers Writing a number as the product of its primes • HCF and LCM • Problem solving questions Fractional and negative powers – *higher only* Ratio and Proportion • Simplify ratios and express them in different forms • Divide quantities into given ratios accurately – using bar model to represent and solve problems Apply ratio and proportion to real life contexts. Basic direct and indirect proportion	Use substitution in algebraic and real life contexts. -life contexts. • Substituting into expressions and equations - using decimals, negative and fractions – prior knowledge form previous terms Speed and density through substitution Draw linear and quadratic graphs through substitution. – both embedding practice Understand correlation and basic data modelling. • Frequency tables, averages, pie charts, bar charts, line graphs etc • Scatter graphs and correlation Strengthen any previously weak Y8 skills for Y9
Assessments	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment

Citizenship	**PSHE Development:** Building resilience – Accepting challenges and learning from mistakes. Developing problem solving skills – Breaking problems down into smaller steps and thinking logically. Financial skills – Adding/Subtracting/Multiplying/Dividing/Percentages – Skills that students will need going into later life when thinking about budgeting, interest and value for money. Communication and teamwork – Explaining reasoning, listening to other people's methods and solutions. Living in the wider world – Looking at statistics and data, financial literacy and understanding risk. Personal development – Promoting independence, responsibility and fairness. **Careers Education:** Pathways into STEM, finance and technical careers. Problem solving skills are based on real life scenarios that people would have. Embedding real world contexts into lessons. Help students understand the importance of maths in everyday life and work **Fundamental British Values: Democracy –** Using informed decisions based on evidence and data, Rule of law – Following correct methods (BIDMAS), Individual liberty – Giving students the freedom to express themselves in problem solving questions and discussions, Mutual respect – Listening to other students, understanding that mistakes happen and will support their learning and working collaboratively. Tolerance of faiths and beliefs – Understand that a lot of different cultures contributed to what maths is today e.g. Pythagoras theorem **SMSC Development:** Developing logic, developing thinking and reasoning skills through problem solving and class discussion around topic.

Maths Overview – Year 9

Weston Secondary School ASPIRE • BELIEVE • ACHIEVE	Students receive six hours of maths lessons a fortnight.		
	Autumn 1	**Autumn 2**	**Spring 1**
Topic(s)	Substitution, Number skills & Circles	Sequences, Algebraic graphs & inequalities	Manipulating algebra and solving equations
Topic Objectives	To build fluency in core arithmetic and BIDMAS using substitution Apply substitution to expressions and circles	To develop understanding of sequences and algebraic relationships through graphs and inequalities.	To develop fluency in manipulating algebra and solving equations. For higher sets: To manipulate algebra and solve increasingly complex equations.
Acquired Knowledge/Skills	Substituting into an expression and formulae Use decimals, fractions – prior knowledge form previous terms Substituting using quadratic formula – *higher* Use estimation, rounding, and bounds in context. Working with indices/powers Area & Circumference of a circle. Compound shapes with semi circles Area of sectors and arc lengths	Recognise different types of sequences Generate the nth term of a linear sequence Plot and interpret linear, quadratic, cubic and reciprocal graphs Understand gradient and intercept. -intercept. Finding the equation of a line from two points Represent inequalities on a number line Solving inequalities Links into prior knowledge from year 7 and 8 of solving equations	Simplifying expressions These skills can be revised through expanding bracket Confidently expand and factorise expressions Factorising quadratics with no coefficient of x^2 Solving equations – 1 step, 2 step, letters on both sides Solving simultaneous equations Form and solve linear or quadratic equations from worded problems Rearranging formulae
Assessments	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment
Citizenship	**PSHE Development: -** Building resilience through challenge and learning from mistakes; developing logical problem solving; financial literacy including budgeting, percentages and value for money; communication and teamwork through explanation and discussion; promoting independence, responsibility and fairness. Solving; financial literacy including budgeting, percentages and value for money; communication and teamwork through explanation and discussion; promoting independence, responsibility and fairness.		

- **Careers Education:** - Developing transferable problem solving skills linked to real world contexts and pathways into STEM, finance and technical careers, highlighting the importance of maths in everyday life and work. Solving skills linked to real world contexts and pathways into STEM, finance and technical careers, highlighting the importance of maths in everyday life and work.
- **Fundamental British Values:** Using evidence to make informed decisions (democracy); following correct mathematical methods (rule of law); expressing ideas confidently (individual liberty); listening respectfully and working collaboratively (mutual respect); recognising the contribution of different cultures to mathematics (tolerance).
- **SMSC Development: -** Developing logical thinking, reasoning and reflection through problem solving and mathematical discussion. Solving and mathematical discussion.

	Spring 2	Summer 1	Summer 2
Topic(s)	Pythagoras, Area & Perimeter of 2D shapes & Volume of 3D Shapes	Trigonometry (SOHCAHTOA), Angles: parallel lines, polygons, interior/exterior & Intro to simple circle theorems *(higher groups).*	Ratio Review – Fractions, Decimals, Percentages (FDP) Review - Probability and Transformations
Topic Objectives	To apply Pythagoras' theorem and calculate area and volume of 2D and 3D shapes. • Develop the ability to use correct units and convert them when calculating area and volume.	To utilise trigonometry to calculate missing sides and angles in right angled triangles. Angled triangles. To apply angle rules, including parallel lines, polygons and introductory circle theorems, to solve problems.	To secure fluency in ratio, fractions and probability. To apply geometric transformations accurately to shapes and coordinates.
Acquired Knowledge/Skills	Apply Pythagoras using structured steps • Label, formula, substitute, solve • Finding the hypotenuse and shorter side Review Area and Perimeter of 2D shapes as well as compound shapes Being able to use correct units and convert between them (length, area, volume, mass etc) Volume of prims • including cylinders, triangular prisms, simple compound shapes Surface area and volume • Spheres, cones and composite solids	Apply Trigonometry using structured steps • Label, formula, substitute, solve • Finding a missing side and angle • Mixed/Combined Pythagoras and trigonometry questions - *higher only* Revise basic angle facts • Straight line, opposite, around a point • Triangles and quadrilaterals Angles in parallel lines – focus on reasoning • Alternate, corresponding and co-interior Interior and exterior angles of polygons Develop a visual understanding of circle theorems and apply them using known angle facts.	All students would have completed this in the last two years Reviews Ratio, Fractions, decimals and percentages Probability review • Probability tree diagram • Introduce Venn diagram and set notations – *new topic* Identify and perform reflection, rotation, translation and enlargement Describe transformations accurately using mathematical language Recognise and describe combined transformations
Assessments	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment	Ongoing AFL - 6 grids, starters, homework End of half term assessment
Citizenship	• **PSHE Development: -** Building resilience through challenge and learning from mistakes; developing logical problem solving; financial literacy including budgeting, percentages and value for money; communication and teamwork through explanation and discussion; promoting independence, responsibility and fairness. Solving; financial literacy including budgeting, percentages and value for money; communication and teamwork through explanation and discussion; promoting independence, responsibility and fairness. • **Careers Education: -** Developing transferable problem solving skills linked to real world contexts and pathways into STEM, finance and technical careers, highlighting the importance of maths in everyday life and work. Solving skills linked to real world contexts and pathways into STEM, finance and technical careers, highlighting the importance of maths in everyday life and work.		

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