

Year 8 Mathematics – Silver Progression Grid (MathsPad)

Students in Maths are taught about the following areas throughout Year 8:

Number

1. Expressions
2. Angles
3. Formulae
4. Area & Volume
5. Equations
6. Number Theory & Sequences
7. Coordinates & Graphs
8. Statistics

Year 8 learning is extended further from Year 7 to introduce students to advanced concepts and methods.

Students' setting is defined at the end of Year 7 initially and reviewed at end of the year. Students' knowledge and understanding are assessed at the end of each topic, at the end of each half-term and at the end of each term.

Students complete and keep a self-evaluation sheet for each topic in their exercise books to reflect on their learning and set themselves measurable targets to work on.

Term	Overview	Knowledge: What will they learn?	Skills / Understanding: What will they be able to do?	Literacy – Key Terminology	Assessment
Autumn Term 1	<ul style="list-style-type: none"> ● Unit 1 Expressions (Weeks 1–6) ● Unit 2 Angles (Weeks 7–7) 	<ul style="list-style-type: none"> ● Use the four operations with negative numbers. ● Simplify expression by collecting like terms. ● Write expressions for length and perimeter. ● Collect like terms with indices. ● Multiply variables with indices. ● Simplify algebraic fractions. ● Write algebraic expressions using multiple operations. ● Expand single brackets. ● Factorise linear expressions. ● Write expressions for areas. ● Recognise angles and know the angle sum around a point. 	<ul style="list-style-type: none"> ● Apply and reason with: use the four operations with negative numbers. ● Apply and reason with: simplify expression by collecting like terms. ● Apply and reason with: write expressions for length and perimeter. ● Apply and reason with: collect like terms with indices. ● Apply and reason with: multiply variables with indices. ● Apply and reason with: simplify algebraic fractions. ● Apply and reason with: write algebraic expressions using multiple operations. 	<ul style="list-style-type: none"> ● (reflex ● acute ● algebraic ● alternate ● angle ● angles ● areas ● around ● brackets ● calculate ● co-interior ● collect ● collecting ● corresponding ● equilateral ● expand ● expression ● expressions ● factorise ● facts ● fractions ● identify ● indices ● involving ● isosceles ● length ● letter ● linear ● lines ● measure ● multiple 	<ul style="list-style-type: none"> ● End of topic checkouts

		<ul style="list-style-type: none"> ● Recognise types of angles (Reflex, acute, obtuse, right). ● Measure angles using a protractor. ● Name angles using 3 letter notation. ● Calculate angles around straight lines and points. ● Identify corresponding, alternate and co-interior angles on parallel lines. ● Recognise equilateral, isosceles, and scalene triangles. ● Calculate angles in triangles. ● Solve problems involving multiple angle facts. ● Calculate angles in quadrilaterals. ● Know the angle facts for parallelograms and trapezia. 	<ul style="list-style-type: none"> ● Apply and reason with: expand single brackets. ● Apply and reason with: factorise linear expressions. ● Apply and reason with: write expressions for areas. ● Apply and reason with: recognise angles and know the angle sum around a point. ● Apply and reason with: recognise types of angles (reflex, acute, obtuse, right). ● Apply and reason with: measure angles using a protractor. ● Apply and reason with: name angles using 3 letter notation. ● Apply and reason with: calculate angles around straight lines and points. ● Apply and reason with: identify 	<ul style="list-style-type: none"> ● multiply ● negative ● notation ● numbers ● obtuse ● operations ● parallel ● parallelograms ● perimeter ● point ● points ● problems ● protractor ● quadrilaterals ● recognise ● right) ● scalene ● simplify ● single ● solve ● straight ● terms ● trapezia ● triangles ● types ● using ● variables ● write 	
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			<p>corresponding, alternate and co-interior angles on parallel lines.</p> <ul style="list-style-type: none"> • Apply and reason with: recognise equilateral, isosceles, and scalene triangles. • Apply and reason with: calculate angles in triangles. • Apply and reason with: solve problems involving multiple angle facts. • Apply and reason with: calculate angles in quadrilaterals. • Apply and reason with: know the angle facts for parallelograms and trapezia. 		
Autumn Term 2	<ul style="list-style-type: none"> • Unit 2 Angles (Weeks 8–11) • Unit 3 Formulae (Weeks 12–14) 	<ul style="list-style-type: none"> • Recognise angles and know the angle sum around a point. • Recognise types of angles (Reflex, 	<ul style="list-style-type: none"> • Apply and reason with: recognise angles and know the angle sum around a point. • Apply and reason with: recognise 	<ul style="list-style-type: none"> • (reflex • acute • alternate • angle • angles • around • calculate 	<ul style="list-style-type: none"> • End of topic checkouts

		<p>acute, obtuse, right).</p> <ul style="list-style-type: none"> ● Measure angles using a protractor. ● Name angles using 3 letter notation. ● Calculate angles around straight lines and points. ● Identify corresponding, alternate and co-interior angles on parallel lines. ● Recognise equilateral, isosceles, and scalene triangles. ● Calculate angles in triangles. ● Solve problems involving multiple angle facts. ● Calculate angles in quadrilaterals. ● Know the angle facts for parallelograms and trapezia. ● Write a formula to describe a relationship. ● Substitute positive and negative 	<p>types of angles (reflex, acute, obtuse, right).</p> <ul style="list-style-type: none"> ● Apply and reason with: measure angles using a protractor. ● Apply and reason with: name angles using 3 letter notation. ● Apply and reason with: calculate angles around straight lines and points. ● Apply and reason with: identify corresponding, alternate and co-interior angles on parallel lines. ● Apply and reason with: recognise equilateral, isosceles, and scalene triangles. ● Apply and reason with: calculate angles in triangles. ● Apply and reason with: solve problems involving multiple angle facts. 	<ul style="list-style-type: none"> ● co-interior ● corresponding ● describe ● equilateral ● facts ● formula ● formulae ● identify ● involving ● isosceles ● letter ● lines ● measure ● multiple ● negative ● notation ● numbers ● obtuse ● operation ● operations ● parallel ● parallelograms ● point ● points ● positive ● problems ● protractor ● quadrilaterals ● rearrange ● recognise ● relationship ● right) ● scalene ● solve ● straight 	
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		<p>numbers into formulae.</p> <ul style="list-style-type: none"> • Rearrange formulae using one operation. • Rearrange formulae using two operations. 	<ul style="list-style-type: none"> • Apply and reason with: calculate angles in quadrilaterals. • Apply and reason with: know the angle facts for parallelograms and trapezia. • Apply and reason with: write a formula to describe a relationship. • Apply and reason with: substitute positive and negative numbers into formulae. • Apply and reason with: rearrange formulae using one operation. • Apply and reason with: rearrange formulae using two operations. 	<ul style="list-style-type: none"> • substitute • trapezia • triangles • types • using • write 	
Spring Term 1	<ul style="list-style-type: none"> • Unit 4 Area & Volume (Weeks 15–19) • Unit 5 Equations (Weeks 20–21) 	<ul style="list-style-type: none"> • Calculate the area of triangles, parallelograms and trapezia. • Write expressions for area. 	<ul style="list-style-type: none"> • Apply and reason with: calculate the area of triangles, parallelograms and trapezia. 	<ul style="list-style-type: none"> • (faces • angle • between • calculate • capacity • circles 	<ul style="list-style-type: none"> • End of topic checkouts • Units 1-3 assessment

		<ul style="list-style-type: none"> ● Calculate the area of circles, semi-circles and quarter circles. ● Work out the area of compound shapes involving circles. ● Write expressions for the area of shapes, including compound rectilinear shapes. ● Know the names and properties of 3D shapes (faces, vertices, edges). ● Recognise and construct nets of 3D shapes. ● Calculate the surface area of cubes and cuboids. ● Know that volume is measured in cubes. ● Convert between units of volume and capacity. ● Calculate the volume of cubes and cuboids. ● Calculate the volume of prisms and cylinders. 	<ul style="list-style-type: none"> ● Apply and reason with: write expressions for area. ● Apply and reason with: calculate the area of circles, semi-circles and quarter circles. ● Apply and reason with: work out the area of compound shapes involving circles. ● Apply and reason with: write expressions for the area of shapes, including compound rectilinear shapes. ● Apply and reason with: know the names and properties of 3d shapes (faces, vertices, edges). ● Apply and reason with: recognise and construct nets of 3d shapes. ● Apply and reason with: calculate the surface area of cubes and cuboids. 	<ul style="list-style-type: none"> ● compound ● construct ● context ● convert ● created ● cubes ● cuboids ● cylinders ● edges) ● equations ● expressions ● including ● involving ● measured ● multi-step ● names ● parallelograms ● prisms ● problems ● properties ● quarter ● recognise ● rectilinear ● semi-circles ● shapes ● sides ● solve ● surface ● trapezia ● triangles ● units ● unknowns ● vertices ● volume 	
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		<ul style="list-style-type: none">• Solve one and two step equations.• Form and solve equations created from angle problems.• Solve multi-step equations.• Set up and solve multi-step equations in the context of area, surface area and volume.• Solve equations with unknowns on both sides.	<ul style="list-style-type: none">• Apply and reason with: know that volume is measured in cubes.• Apply and reason with: convert between units of volume and capacity.• Apply and reason with: calculate the volume of cubes and cuboids.• Apply and reason with: calculate the volume of prisms and cylinders.• Apply and reason with: solve one and two step equations.• Apply and reason with: form and solve equations created from angle problems.• Apply and reason with: solve multi-step equations.• Apply and reason with: set up and solve multi-step equations in the	<ul style="list-style-type: none">• write	
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			<p>context of area, surface area and volume.</p> <ul style="list-style-type: none"> • Apply and reason with: solve equations with unknowns on both sides. 		
Spring Term 2	<ul style="list-style-type: none"> • Unit 5 Equations (Weeks 22–24) • Unit 6 Number Theory & Sequences (Weeks 25–27) 	<ul style="list-style-type: none"> • Solve one and two step equations. • Form and solve equations created from angle problems. • Solve multi-step equations. • Set up and solve multi-step equations in the context of area, surface area and volume. • Solve equations with unknowns on both sides. • List the factors of a number. • Find the highest common factor of two or more numbers by listing. 	<ul style="list-style-type: none"> • Apply and reason with: solve one and two step equations. • Apply and reason with: form and solve equations created from angle problems. • Apply and reason with: solve multi-step equations. • Apply and reason with: set up and solve multi-step equations in the context of area, surface area and volume. • Apply and reason with: solve equations with unknowns on both sides. 	<ul style="list-style-type: none"> • (geometric algebra • angle arithmetic) • common composite • context continue • created different • equations evens • expression expressions • factor factors • fibonacci highest • identify listing • lowest multi-step • multiple multiples • number 	<ul style="list-style-type: none"> • End of topic checkouts •

		<ul style="list-style-type: none"> ● Recognise and list prime numbers. Recognise composite numbers. ● Write a number as the product of its prime factors. ● List the multiples of a number. ● Find the lowest common multiple of a set of two or more numbers. ● Write expressions for odds, evens and multiples in algebra. ● Identify term to term rules and use them to continue a sequence. ● Identify different types of sequence (Geometric, Fibonacci, Arithmetic) ● Use the nth term rule to find terms of a sequence. ● Write an expression for the nth term of a sequence. 	<ul style="list-style-type: none"> ● Apply and reason with: list the factors of a number. ● Apply and reason with: find the highest common factor of two or more numbers by listing. ● Apply and reason with: recognise and list prime numbers. recognise composite numbers. ● Apply and reason with: write a number as the product of its prime factors. ● Apply and reason with: list the multiples of a number. ● Apply and reason with: find the lowest common multiple of a set of two or more numbers. ● Apply and reason with: write expressions for 	<ul style="list-style-type: none"> ● numbers ● prime ● problems ● product ● recognise ● recognise ● rules ● sequence ● sides ● solve ● surface ● terms ● types ● unknowns ● volume ● write 	
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		<ul style="list-style-type: none"> Use algebra to identify if a term is in a sequence. 	<p>odds, evens and multiples in algebra.</p> <ul style="list-style-type: none"> Apply and reason with: identify term to term rules and use them to continue a sequence. Apply and reason with: identify different types of sequence (geometric, fibonacci, arithmetic) Apply and reason with: use the nth term rule to find terms of a sequence. Apply and reason with: write an expression for the nth term of a sequence. Apply and reason with: use algebra to identify if a term is in a sequence. 		
Summer Term 1	<ul style="list-style-type: none"> Unit 6 Number Theory & 	<ul style="list-style-type: none"> List the factors of a number. 	<ul style="list-style-type: none"> Apply and reason with: list the 	<ul style="list-style-type: none"> (geometric algebra 	<ul style="list-style-type: none"> End of topic checkouts

	<p>Sequences (Weeks 28–29)</p> <ul style="list-style-type: none"> Unit 7 <p>Co-ordinates & Graphs (Weeks 30–34)</p>	<ul style="list-style-type: none"> Find the highest common factor of two or more numbers by listing. Recognise and list prime numbers. Recognise composite numbers. Write a number as the product of its prime factors. List the multiples of a number. Find the lowest common multiple of a set of two or more numbers. Write expressions for odds, evens and multiples in algebra. Identify term to term rules and use them to continue a sequence. Identify different types of sequence (Geometric, Fibonacci, Arithmetic) Use the nth term rule to find terms of a sequence. 	<p>factors of a number.</p> <ul style="list-style-type: none"> Apply and reason with: find the highest common factor of two or more numbers by listing. Apply and reason with: recognise and list prime numbers. recognise composite numbers. Apply and reason with: write a number as the product of its prime factors. Apply and reason with: list the multiples of a number. Apply and reason with: find the lowest common multiple of a set of two or more numbers. Apply and reason with: write expressions for odds, evens and 	<ul style="list-style-type: none"> arithmetic) between calculate co-ordinate co-ordinates common composite continue creating cubic determine different distance evens expression expressions factor factors fibonacci functions graphs highest horizontal identify inputs linear listing lowest multiple multiples number numbers outputs parallel prime 	<ul style="list-style-type: none">
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		<ul style="list-style-type: none"> ● Write an expression for the nth term of a sequence. ● Use algebra to identify if a term is in a sequence. ● Work out inputs and outputs of functions. ● Plot co-ordinates. ● Recognise the x and y values of co-ordinates. ● Calculate the horizontal and vertical distance between co-ordinates. ● Plot and recognise linear graphs parallel to the axes. ● Plot linear graphs by creating a table of co-ordinates. ● Determine whether a line will pass through a co-ordinate. ● Plot quadratic and cubic graphs. ● Recognise the shape and symmetries of 	<p>multiples in algebra.</p> <ul style="list-style-type: none"> ● Apply and reason with: identify term to term rules and use them to continue a sequence. ● Apply and reason with: identify different types of sequence (geometric, fibonacci, arithmetic) ● Apply and reason with: use the nth term rule to find terms of a sequence. ● Apply and reason with: write an expression for the nth term of a sequence. ● Apply and reason with: use algebra to identify if a term is in a sequence. ● Apply and reason with: work out inputs and outputs of functions. 	<ul style="list-style-type: none"> ● product ● quadratic ● recognise ● recognisie ● rules ● sequence ● shape ● symmetries ● table ● terms ● through ● types ● values ● vertical ● whether ● write 	
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		<p>linear, quadratic and cubic graphs.</p> <ul style="list-style-type: none">• Read and use graphs.	<ul style="list-style-type: none">• Apply and reason with: plot co-ordinates.• Apply and reason with: recognise the x and y values of co-ordinates.• Apply and reason with: calculate the horizontal and vertical distance between co-ordinates.• Apply and reason with: plot and recognise linear graphs parallel to the axes.• Apply and reason with: plot linear graphs by creating a table of co-ordinates.• Apply and reason with: determine whether a line will pass through a co-ordinate.• Apply and reason with: plot quadratic and cubic graphs.• Apply and reason with: recognise the shape and		
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			<p>symmetries of linear, quadratic and cubic graphs.</p> <ul style="list-style-type: none"> • Apply and reason with: read and use graphs. 		
Summer Term 2	<ul style="list-style-type: none"> • Unit 8 Statistics (Weeks 35–39) 	<ul style="list-style-type: none"> • Recognise how data is collected and that poorly designed questionnaires can result in misleading data. • Populate and interpret frequency tables. • Recognise types of data (Qualitative, Quantitative, Discrete, Continuous) • Represent data using pictograms and bar charts. • Interpret and construct pie charts. • Interpret and construct scatter graphs. • Recognise misleading graphs. • Calculate averages. 	<ul style="list-style-type: none"> • Apply and reason with: recognise how data is collected and that poorly designed questionnaires can result in misleading data. • Apply and reason with: populate and interpret frequency tables. • Apply and reason with: recognise types of data (qualitative, quantitative, discrete, continuous) • Apply and reason with: represent data using pictograms and bar charts. • Apply and reason with: interpret and 	<ul style="list-style-type: none"> • (qualitative • averages • calculate • charts • collected • construct • continuous) • designed • discrete • frequency • graphs • interpret • misleading • outliers • pictograms • poorly • populate • quantitative • questionnaires • range • recognise • represent • result • scatter • tables • types • using 	<ul style="list-style-type: none"> • End of topic checkouts • End of year assessment

		<ul style="list-style-type: none"> Recognise outliers and calculate the range. 	<p>construct pie charts.</p> <ul style="list-style-type: none"> Apply and reason with: interpret and construct scatter graphs. Apply and reason with: recognise misleading graphs. Apply and reason with: calculate averages. Apply and reason with: recognise outliers and calculate the range. 		
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Progress check

- Above Expected: Secure understanding of all core objectives and confident application to unfamiliar problems.
- Expected: Secure understanding of most core objectives with occasional scaffolding.
- Below Expected: Insecure understanding of several core objectives; regular support required.
- Cause for concern: Significant gaps in prerequisite knowledge preventing access to the curriculum.