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.

Overview	Knowledge: What will they Learn?	Skills: Understanding - what will they be able do?	Literacy - Key Terminology	Assessment
Autumn Term 1 • Unit 1 Expressions (Weeks 1–6) • Unit 2 Angles (Weeks 7–7)	• 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.	• 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.	• (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	• End of topic checkouts

	• 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.	• 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	• multiple • 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	

		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. ● Apply and reason with: calculate angles in quadrilaterals. ● Apply and reason with: know the angle facts for parallelograms and trapezia.		
Autumn Term 2 ● Unit 2 Angles (Weeks 8–11) ● Unit 3 Formulae (Weeks 12–14)	● Recognise angles and know the angle sum around a point. ● Recognise types of angles (Reflex,	● Apply and reason with: recognise angles and know the angle sum around a point. ● Apply and reason with: recognise	● (reflex ● acute ● alternate ● angle ● angles ● around ● calculate	● End of topic checkouts

	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. ● Write a formula to describe a relationship. ● Substitute positive and negative	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 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.	● 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	

	numbers into formulae. ● Rearrange formulae using one operation. ● Rearrange formulae using two operations.	● 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.	● substitute ● trapezia ● triangles ● types ● using ● write	
Progress check	**Grade boundaries for assessing progress are determined at the end of each term, taking into account the difficulty of the paper sat and the flight path of the individual student** · Above Expected:			

	Students meet all bullet points within the Skills/Understanding column for the relevant units, and can apply skills to unfamiliar problems with minimal scaffolding. · Expected: Students meet most bullet points within the Skills/Understanding column for the relevant units, with occasional support needed for multi-step problems. · Below Expected: Students meet two or fewer bullet points within the Skills/Understanding column for the relevant units, and require regular scaffolding to access the curriculum. · Cause for concern: Students produce insufficient work to meet any of the Skills/Understanding descriptors and/or demonstrate significant gaps in number fluency that prevent progress.			
Spring Term 1 ● Unit 4 Area & Volume (Weeks 15–19) ● Unit 5 Equations (Weeks 20–21)	● Calculate the area of triangles, parallelograms and trapezia. ● Write expressions for area. ● 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	● Apply and reason with: calculate the area of triangles, parallelograms and trapezia. ● 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	● (faces ● angle ● between ● calculate ● capacity ● circles ● compound ● construct ● context ● convert ● created ● cubes ● cuboids ● cylinders ● edges) ● equations ● expressions	● End of topic checkouts ● Units 1-3 assessment

	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. ● 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	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. ● 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	● 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 ● write	

	context of area, surface area and volume. ● Solve equations with unknowns on both sides.	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 context of area, surface area and volume. ● Apply and reason with: solve equations with unknowns on both sides.		
Spring Term 2	● Solve one and two step equations.	● Apply and reason with: solve one	● (geometric ● algebra	● End of topic checkouts

• Unit 5 Equations (Weeks 22–24) • Unit 6 Number Theory & Sequences (Weeks 25–27)	• 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. • Recognise and list prime numbers. Recognsie composite numbers. • Write a number as the product of its prime factors. • List the multiples of a number. • Find the lowest common multiple	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. • 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	• angle • arithmetic) • common • composite • context • continue • created • different • equations • evens • expression • expressions • factor • factors • fibonacci • highest • identify • listing • lowest • multi-step • multiple • multiples • number • numbers • prime • problems • product • recognise • recognsie • rules • sequence • sides • solve • surface • terms	•

	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. ● Use algebra to identify if a term is in a sequence.	and list prime numbers. recognsie 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 multiples in algebra. ● Apply and reason with: identify term to term rules and use them to continue a sequence. ● Apply and reason with: identify different types of	● types ● unknowns ● volume ● write	

		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.		
Progress check	**Grade boundaries for assessing progress are determined at the end of each term, taking into account the difficulty of the paper sat and the flight path of the individual student** · Above Expected: Students meet all bullet points within the Skills/Understanding column for the relevant units, and can apply skills to unfamiliar problems with minimal scaffolding. · Expected: Students meet most bullet points within the Skills/Understanding column for the relevant units, with occasional support needed for multi-step problems. · Below Expected:			

	Students meet two or fewer bullet points within the Skills/Understanding column for the relevant units, and require regular scaffolding to access the curriculum. · Cause for concern: Students produce insufficient work to meet any of the Skills/Understanding descriptors and/or demonstrate significant gaps in number fluency that prevent progress.			
Summer Term 1 ● Unit 6 Number Theory & Sequences (Weeks 28–29) ● Unit 7 Co-ordinates & Graphs (Weeks 30–34)	● List the factors of a number. ● Find the highest common factor of two or more numbers by listing. ● Recognise and list prime numbers. Recognsie 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.	● 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. recognsie 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.	● (geometric ● algebra ● 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	● End of topic checkouts ●

	• 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. • 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.	• 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 multiples in algebra. • 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.	• inputs • linear • listing • lowest • multiple • multiples • number • numbers • outputs • parallel • prime • product • quadratic • recognise • recognsie • rules • sequence • shape • symmetries • table • terms • through • types • values • vertical • whether • write	

	• 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 linear, quadratic and cubic graphs. • Read and use graphs.	• 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. • 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 symmetries of linear, quadratic and cubic graphs. ● Apply and reason with: read and use graphs.		
Summer Term 2 ● Unit 8 Statistics (Weeks 35–39)	● 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) ● Reprsent data using pictograms and bar charts.	● 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,	● (qualitative ● averages ● calculate ● charts ● collected ● construct ● continuous) ● designed ● discrete ● frequency ● graphs ● interpret ● misleading ● outliers ● pictograms ● poorly ● populate ● quantitative	● End of topic checkouts ● End of year assessment

	● Interpret and construct pie charts. ● Interpret and construct scatter graphs. ● Recognise misleading graphs. ● Calculate averages. ● Recognise outliers and calculate the range.	discrete, continuous) ● Apply and reason with: reprsent data using pictograms and bar charts. ● Apply and reason with: interpret and construct pie charts. ● 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.	● questionnaires ● range ● recognise ● reprsent ● result ● scatter ● tables ● types ● using	
Progress check	**Grade boundaries for assessing progress are determined at the end of each term, taking into account the difficulty of the paper sat and the flight path of the individual student** · Above Expected: Students meet all bullet points within the Skills/Understanding column for the relevant units, and can apply skills to unfamiliar problems with minimal scaffolding.			

	· Expected: Students meet most bullet points within the Skills/Understanding column for the relevant units, with occasional support needed for multi-step problems. · Below Expected: Students meet two or fewer bullet points within the Skills/Understanding column for the relevant units, and require regular scaffolding to access the curriculum. · Cause for concern: Students produce insufficient work to meet any of the Skills/Understanding descriptors and/or demonstrate significant gaps in number fluency that prevent progress.