Year 7 Mathematics – Silver Progression Grid (MathsPad)

Overview

Students in Maths are taught about the following areas throughout Year 7:

1. Place Value
2. Calculations
3. Negative Numbers
4. Ratio and Proportion
5. Fractions
6. Indices
7. Intro to Algebra
8. Working with Measures
9. Shapes, Area and Pythagoras
10. Fractions Decimals and Percentages

Year 7 learning is built upon the mathematical foundations established in Key Stage 2 and extended to prepare students for their GCSE at the end of KS4.

Students are initially assessed at the beginning of Year 7 by using a Baseline Assessment supported by CATS that defines the setting. Students' knowledge and understanding are assessed at the end of each topic, at the end of each term and at the end of the academic year.

Students complete and keep a self-evaluation sticker 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 Place Value (Weeks 1–4) • Unit 2 Calculations (Weeks 5–7)	• Read & write integers & decimals. • Use place value to convert tenths, hundredths, thousandths etc. from fractions and mixed numbers to decimals and vice versa. • Recognise all decimals are terminating, recurring or irrational. • Use inequality symbols ($\neq$, $\leq$, $\geq$) • Compare decimals & fractions. • Order decimals and place them on the number line. • Round to decimal places & significant figures. • Use written methods to add, subtract and	• Stretch & challenge: Add and subtract recurring decimals. • Recognise types of irrational number, including surds and pi. • Consider calculations that may create irrational numbers. • Round recurring decimals. • Work with numbers written in other bases. • Work backwards to find missing digits in addition and subtraction problems involving integers and decimals. • Use short division to notice the patterns in fractions as decimals. • Multiply and divide by 0.1, 0.001 etc.	• addition • decimal • decimal division • decimal multiplication • decimal places • division • estimate • fraction • inequality • integer • inverse • irrational • mixed number • multiplication • number line • place value • powers of 10 • recurring • rounding • short division • significant figures • subtraction • terminating • word problem • written methods • $\neq$ • $\leq$ • $\geq$	• Baseline Assessment at the start of year 7 • End of topic checkouts

	divide integers and decimals. ● Use short division to change fractions to decimals. ● Multiply integers and decimals by powers of 10. ● Multiply decimals. ● Know the effect of dividing by 0.5, 0.01, 0.001 and 0. ● Divide decimals.	Recognise the equivalence of multiplying by 0.1 and dividing by 10. ● Solve mixed word problems and puzzles involving decimals. ● Use clever calculation strategies to multiply and divide mentally.		
Autumn Term 2 ● Unit 2 Calculations (Weeks 8–8) ● Unit 3 Negative Numbers (Weeks 9–11) ● Unit 4 Fractions (Weeks 12–14)	● Use written methods to add, subtract and divide integers and decimals. ● Use short division to change fractions to decimals. ● Multiply integers and decimals by powers of 10. ● Multiply decimals. ● Know the effect of dividing by 0.5, 0.01, 0.001 and 0. ● Divide decimals. ● Order positive and negative numbers.	● Stretch & challenge: Add and subtract recurring decimals. ● Work backwards to find missing digits in addition and subtraction problems involving integers and decimals. ● Use short division to notice the patterns in fractions as decimals. ● Multiply and divide by 0.1, 0.001 etc. Recognise the equivalence of	● add ● addition ● decimal division ● decimal multiplication ● denominator ● divide ● division ● equivalent ● estimate ● fraction ● fraction of an amount ● improper ● integer ● inverse ● mixed number ● multiplication ● multiply	● End of topic checkouts

	• Add, subtract, multiply and divide with negative integers and decimals. • Recognise 1 whole can be written as a fraction in different ways. • Shade a fraction of a diagram. • Convert between improper fractions and mixed numbers. • Calculate a fraction of an amount. • Find equivalent fractions and simplify. • Convert fractions and decimals using equivalent fractions, short division and place value. • Add, subtract, multiply and divide with proper fractions. • Identify reciprocals.	multiplying by 0.1 and dividing by 10. • Solve mixed word problems and puzzles involving decimals. • Use clever calculation strategies to multiply and divide mentally. • Stretch & challenge: Consider generalisations with negative numbers, e.g. 'two negative numbers could add up to 0'. • Multiply negative numbers repeatedly, recognising when the overall product is positive or negative. • Use the four operations with negative decimals. • Stretch & challenge: Find the fraction of a diagram shaded by considering equal parts. • Work backwards to find missing digits	• negative • number line • numerator • ordering • positive • powers of 10 • proper • reciprocal • rules of signs • short division • simplify • subtract • subtraction • word problem • written methods	

	• Calculate with fractions, decimals and negatives.	in 'fraction of' problems. • Solve reverse fraction problems (find the whole, given a part). • Investigate how Egyptians used unit fractions to make other fractions. • Use the four operations with mixed numbers.		

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 Fractions (Weeks 15–16) ● Unit 5 Indices (Weeks 17–21)	● Recognise 1 whole can be written as a fraction in different ways. ● Shade a fraction of a diagram. ● Convert between improper fractions and mixed numbers. ● Calculate a fraction of an amount. ● Find equivalent fractions and simplify. ● Convert fractions and decimals using equivalent fractions, short division and place value. ● Add, subtract, multiply and divide with proper fractions. ● Identify reciprocals. ● Calculate with fractions, decimals and negatives. ● Calculate products of (3+) integers or fractions,	● Stretch & challenge: Find the fraction of a diagram shaded by considering equal parts. ● Work backwards to find missing digits in 'fraction of' problems. ● Solve reverse fraction problems (find the whole, given a part). ● Investigate how Egyptians used unit fractions to make other fractions. ● Use the four operations with mixed numbers. ● Stretch & challenge: Investigate patterns in the digits of powers, to try and identify the last digit of bases raised to very large indices. ● Work backwards to solve problems involving missing bases or indices. ● Combine index laws to simplify	● add ● BIDMAS ● cube ● cube root ● denominator ● divide ● equivalent ● fraction ● fraction of an amount ● improper ● index ● laws of indices ● mixed number ● multiply ● negative index ● numerator ● order of operations ● power ● proper ● reciprocal ● root ● simplify ● square ● square root ● subtract	● January Unit 1-3 Assessment ● End of topic checkouts

	including negatives. ● Use index notation to raise positive, negative, fractional and decimal bases to an index. ● Recognise square and cube numbers. ● Recognise the meaning of the index 1 and 0. ● Evaluate bases raised to negative indices. ● Use the laws of indices. ● Calculate square, cube and higher roots, where the result is both integer or decimal (using a calculator) ● Estimate roots. ● Use the order of operations.	expressions with the same base. ● Consider the roots of fractions and negative numbers. ● Recognise when a root is undefined.		
Spring Term 2 ● Unit 6 Intro to Algebra (Weeks 22–27)	● Use and interpret algebraic notation. ● Collect like terms.	● Stretch & challenge: Multiply and divide algebraic fractions.	● algebraic notation ● brackets ● coefficient ● equation	● End of topic checkouts

	• Multiply variables, including use of index notation. • Use index laws to simplify expressions involving indices. • Use all four operations and brackets to write algebraic statements. • Substitute positive and negative numbers into expressions. • Solve one step and two step equations.	• Subsitute fractions into expressions. • Solve one step equations involving indices and roots. • Solve two step equations involving division. • Use algebra to prove how number tricks work.	• evaluate • expression • index notation • like terms • solve • substitute • term • variable	
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Summer Term 1 ● Unit 7 Working with Measures (Weeks 28–31) ● Unit 8 Shapes, Area & Pythag (Weeks 32–34)	● Estimate calculations by rounding to 1 significant figure. ● Find upper and lower bounds of measured quantities. ● Write an error interval. ● Write numbers in standard form. ● Estimate metric lengths. Convert metric units. ● Recognise equal length line notation. ● Calculate perimeters, including L shapes. ● Recognise parts of a circle. Calculate circumference.	● Stretch & challenge: Convert large and small metric lengths written in standard form. ● Estimate very large and small lengths. ● Investigate perimeters that can be made with tiles. ● Calculate speeds, distances and times. ● Stretch & challenge: Convert metric units for area. ● Find areas of shapes by considering a whole shape subtract another shape. ● Investigate Pythagoras' theorem by finding	● area ● circle ● circumference ● compound shape ● convert units ● diameter ● error interval ● estimate ● hypotenuse ● lower bound ● metric ● parallel ● parallelogram ● perimeter ● perpendicular ● pi ● Pythagoras' theorem ● quadrilateral ● radius ● significant figures ● speed ● standard form ● time interval ● trapezium ● triangle	● End of topic checkouts

	• Write expression for perimeter. Solve equations involving perimeter. • Convert units of time. Calculate time intervals. • Recognise parallel, perpendicular and equal length line notation. • Construct parallel and perpendicular lines. • Recognise properties of quadrilaterals. • Know that area is measured in squares. • Calculate areas of parallelograms, triangles,trapezia, compound shapes. • Calculate the area of circles. • Use Pythagoras' theorem to find missing lengths.	areas of tilted squares. • Apply Pythagoras' theorem to find areas and perimeters of shapes.	• upper bound	
Summer Term 2	• Recognise parallel, perpendicular and	• Stretch & challenge: Convert metric units for area.	• area • circle • compound shape	• End of topic checkouts

• Unit 8 Shapes, Area & Pythag (Weeks 35–36) • Unit 9 Fractions. Decimals, Percentages (Weeks 37–39)	equal length line notation. • Construct parallel and perpendicular lines. • Recognise properties of quadrilaterals. • Know that area is measured in squares. • Calculate areas of parallelograms, triangles,trapezia, compound shapes. • Calculate the area of circles. • Use Pythagoras' theorem to find missing lengths. • Compare and order fractions and mixed numbers. • Convert fractions and decimals. • Order fractions and decimals. • Convert between fractions, decimals and percentages. • Calculate a percentage of an amount (non calc)	• Find areas of shapes by considering a whole shape subtract another shape. • Investigate Pythagoras' theorem by finding areas of tilted squares. • Apply Pythagoras' theorem to find areas and perimeters of shapes. • Stretch & challenge: Compare recurring and terminating decimals. • Convert recurring decimals to fractions. • Calculate percentage increases and decreases using decimal multipliers.	• decimal • diameter • equivalence • fraction • hypotenuse • multiplier • parallel • parallelogram • percent of an amount • percentage • percentage decrease • percentage increase • perpendicular • Pythagoras' theorem • quadrilateral • radius • recurring decimal • trapezium • triangle	• End of Year assessment

	• Use a decimal multiplier to find a percentage of an amount. • Use all four operations with decimals and fractions.			

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