

Year 7 Scheme of work

Mα + πS

At Upper Shirley High

Guidelines

- This scheme of work is designed to ensure that pupils are confident and fluent with the key skills that underpin GCSE mathematics.
- The Year 7 and Year 8 scheme of work will cover similar topics so that when pupils revisit them they can ensure mastery and retention.
- It is important that we continue to use and extend the knowledge that they have acquired from KS2. To this end you will find information about the Year 6 scheme of work to help you know where to begin teaching certain topics.
- Pupils will be regularly assessed three times a year and given the opportunity to know how they are performing in comparison to other pupils who took the same test.
- We are a team and this is our scheme of work. Come talk to me when you have ideas for improvements / tweaks.
- Each test will be cumulative and will contain questions on any topics studied so far in the year. In order to make you're your pupils retain their skills and are successful it is a good idea to constantly revise previous topics in weekly 6 grids and in lesson starters. As is common in the Maths GCSE, topics may be combined with other topics etc so I suggest also doing this in 6 grids and ensuring that pupils are able to apply their knowledge backwards, upside down and inside out.
- Topics in bold are either new or will probably require more time.
- Red codes (e.g. **1.2**) show suggested exercises in the recommended textbook 'Foundation GCSE mathematics revision and practice'. **1:2** – refers to chapter 1, exercise 2. Blue codes (e.g. **4:12**) show suggested exercises in the recommended textbook 'Higher GCSE mathematics revision and practice'. A guideline is that a pupil who has completed a good amount of questions in each exercise is working at a level appropriate for the test they will take.

Support	Core	Extension
DC1 - Baseline Test		
<p style="text-align: center;">Number Prior Learning in Year 6:</p> <ul style="list-style-type: none"> • Round any number to a required degree of accuracy • Use negative numbers in context and calculate intervals across zero <ul style="list-style-type: none"> • Read, write order and compare numbers up to 10 000 000 • Recognise and use square and cube numbers • Multiply up to 4 digit by 2 digit numbers using long multiplication • Divide numbers up to 4 digit by 2 digit using long or short division where appropriate • Use knowledge of the order of operations to carry our calculations with the four operations <ul style="list-style-type: none"> • Identify common factors, common multiples and primes. 		
<p>Four Operations including decimals</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) including decimals 1:7, 1:8, 1:19, 1:20, - Multiplication including squaring and decimals. They have learnt long multiplication. Consider showing them the lattice method for decimals.1:10, 1:22, 1:23, - Short division (bus stop method) 1:11, 1:24 - Mixed problems involving the above* 1:12, - Revise order of operations. 	<p>Four Operations including decimals</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) including decimals 1:7, 1:8, 1:19, 1:20, - Multiplication including squaring and decimals. They have learnt long multiplication. Consider showing them the lattice method for decimals.1:10, 1:22, 1:23, - Short division (bus stop method) 1:11, 1:24, 1:25 - Mixed problems involving the above - Revise order of operations. 1:12, 1:13, 1:14, 	<p>Four Operations including decimals</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) including decimals 1:7, 1:8, 1:19, 1:20, Speed tests p.17 - Multiplication including squaring and decimals. They have learnt long multiplication. Consider showing them the lattice method for decimals. 1:10, 1:22, 1:23, 1:28, - Short division (bus stop method) 1:11, 1:24, 1:25, 1:10, - Mixed problems involving the above 1:14, 1:26, 1:27, 1:11 - Revise order of operations.
<p>The Number system</p> <ul style="list-style-type: none"> - Multiply and divide by 10, 100 and 1000 start with more basic, no decimals - Four operations with negative numbers Not covered in depth at primary so this will require some time. 1:29, 1:30, 1:32, - Negative numbers in context 	<p>The Number system</p> <ul style="list-style-type: none"> - Multiply and divide by 10, 100 and 1000 1:21 - Four operations with negative numbers Not covered in depth at primary so this will require some time. 1:30, 1:32, 1:31 - Negative numbers in context 	<p>The Number system</p> <ul style="list-style-type: none"> - Multiply and divide by 10, 100 and 1000 1:21 - Four operations with negative numbers 1:30, 1:32, 1:31, 1:26, 1:27 Not covered in depth at primary so this will require some time. - Negative numbers in context

<ul style="list-style-type: none"> - Order positive and negative numbers 	<ul style="list-style-type: none"> - Order positive and negative numbers - Indices 1:35. - Extension: Consider working with powers of 10 in depth to prepare them for standard form. 	<ul style="list-style-type: none"> - Order positive and negative numbers - Indices 1:35, 1:37 - Standard form from first principles (not just a 'rule') 1:42, 1:43
Mixed Revision		
Half Term		
<p>Algebra Prior Learning in Year 6:</p> <ul style="list-style-type: none"> • Use simple formulae • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfy an equation with two unknowns <ul style="list-style-type: none"> • Enumerate possibilities of combinations of two variables 		
<p>THE YEAR SEVEN INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –</p> <ul style="list-style-type: none"> - Basic concepts of algebra 2:1 - Simplifying expressions 2:3, 2:4 - Solving simple equations using a clear recognised layout 2:9 <p>See ten ticks for additional resources on the early stages of algebra.</p>	<p>THE YEAR SEVEN INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –</p> <ul style="list-style-type: none"> - Basic concepts of algebra 2:1, 2:2 - Simplifying expressions 2:3, 2:4 - Expanding and simplifying with single brackets 2:5, 2:6 - Solving simple equations using a clear recognised layout (including unknowns on both sides) 2:9, 2:10, ~2:11. Test will only include questions with integer answers. - Solving equations which appear difficult and require number skills learnt in previous half term (e.g. negatives and long division) E.g. $7x + 136 = 1018$ - For extension you could include 	<p>THE YEAR SEVEN INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –</p> <ul style="list-style-type: none"> - Basic concepts of algebra 2:1, 2:2 - Simplifying expressions 2:3, 2:4, 2:7 - Expanding and simplifying with single brackets 2:5, 2:6, 3:4 - Expanding double brackets 3:5 - Solving simple equations using a clear recognised layout (including unknowns on both sides) 2:9, 2:10, ~2:11, 3:11 Test may include questions with non-integer answers. - Solving equations which appear difficult and require number skills learnt in previous half term (e.g. negatives and long division) E.g. $7x + 136 = 1018$

	expanding double brackets.	<ul style="list-style-type: none"> - Factorising single brackets (up to expressions such as $4a^2 - 2a$) 3:6 - For extension you could include solving equations including brackets.
DC2 – on everything in the scheme of work so far		
Christmas		
Shape Prior Learning in Year 6: <ul style="list-style-type: none"> • Calculate the areas of parallelograms and triangles • Calculate volumes of cubes and cuboids • Calculate the perimeter including compound shapes 	Angles Prior Learning in Year 6: <ul style="list-style-type: none"> • Draw and measure angles • Find missing angles when on a straight line, at a point, in a rectangle or vertically opposite. • Know what 90°, 180°, 270° and 360° look like. 	Percentages Prior learning (BBC BITESIZE): <ul style="list-style-type: none"> • Percentages are out of 100 • Converting between fractions, decimals and percentages • Finding simple percentages e.g. 20% by converting to a decimal and multiplying or by finding 10% and multiplying
Area, Perimeter and Angles <ul style="list-style-type: none"> - Areas of rectangles, squares and triangles using number skills developed in first half term. 3:24, 3:25, 3:27, 3:30, - Simple angle reasoning using number skills developed in first half term (straight lines, triangles, quadrilaterals, around a point, opposite angles) 3:3, 3:5, 3:6, - Simple area and perimeter questions in context 	Area, Perimeter and Angles <ul style="list-style-type: none"> - Areas of rectangles, squares and triangles using number skills developed in first half term 3:24, 3:25, 3:27 will need examples using larger numbers to revise numeracy skills. - Calculate the area of a trapezium using the formula. - Areas and perimeters of simple compound shapes 3:26, , 3:30 - Simple angle reasoning using number skills developed in first half term (straight lines, triangles, quadrilaterals, around a point, opposite angles) 3:3, 3:5, 3:6, - Area and perimeter questions in context 	Area, Perimeter and Angles <ul style="list-style-type: none"> - Areas of rectangles, squares and triangles using number skills developed in first half term will need examples using larger numbers to revise numeracy skills. - Calculate the area of a trapezium using the formula. - Areas and perimeters of simple compound shapes 3:26, , 3:30 - Simple angle reasoning using number skills developed in first half term (straight lines, triangles, quadrilaterals, around a point, opposite angles) 3:3, 3:5, 3:6, - Form and solve equations using algebra knowledge gained before Christmas 2:3 (q41-46) - Area and perimeter questions in context

<p>Percentages</p> <ul style="list-style-type: none"> - Revision of what percentage means 5:11, - Calculate percentages of amounts 5:13, - Calculate percentage increases and decreases of amounts without a calculator by finding the percent and adding it on 5:14 - Simple problems involving percentages 5:15, 5:16 	<p>Percentages</p> <ul style="list-style-type: none"> - Understand what a percentage is - Calculate percentages of amounts 5:11, - Calculate percentage increases and decreases without a calculator 5:13, - Calculate percentage increase and decrease with a calculator using a multiple e.g. to increase by 30% you multiply by 1.3. - Calculate numbers as percentages of other numbers (calculator allowed) - Problems involving percentages 5:15, 5:16 	<p>Percentages</p> <ul style="list-style-type: none"> - Understand what a percentage is - Calculate percentages of amounts 5:11, - Calculate percentage increases and decreases without a calculator 5:13, - Calculate percentage increase and decrease with a calculator using a multiple e.g. to increase by 30% you multiply by 1.3. - Compound interest 5:23, - Reverse percentages 5:21, 5:22,
<p>Half Term (no test)</p>		
<p>Fractions Prior Learning in Year 6:</p> <ul style="list-style-type: none"> • Simplify fractions • Compare and order fractions • Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions • Multiply two proper fractions and simplify • Divide proper fractions by whole numbers • Use division to find decimal equivalents 		<p>Number Prior Learning in Year 6:</p> <ul style="list-style-type: none"> • Recognise and use square and cube numbers • Establish whether a number up to 100 is prime and recall prime numbers up to 19 • Identify multiples and factors including common factors of two numbers • Understand and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
<p>Fractions</p> <ul style="list-style-type: none"> - Revision of fractions 5:4, - Writing fractions as equivalents 5:5 - Simplifying fractions by finding a common factor (not just by halving) 5:5 	<p>Fractions</p> <ul style="list-style-type: none"> - Simplifying fractions by finding a common factor (not just by halving) 5:5 Q10 -34, 1:15 - Convert between improper fractions and 	<p>Fractions</p> <ul style="list-style-type: none"> - Simplifying fractions by finding a common factor (not just by halving) 5:5 Q10 -34, 1:15 - Convert between improper fractions and mixed numbers 5:6

<p>Q10 -34</p> <ul style="list-style-type: none"> - Add and subtract fractions with the same denominator - Multiply and divide simple fractions 5:10 - Finding fractions of amounts 5:8 - Fraction questions in context - Add and subtract simple fractions with different denominators 5:9 <p>(No mixed numbers for this group at this stage)</p>	<p>mixed numbers 5:6</p> <ul style="list-style-type: none"> - Add and subtract fractions by finding a common denominator 5:9, 1:16 - Multiply fractions (including mixed numbers) 5:10 - Divide fractions (including mixed numbers) 5:10, 1:17 Q3 - Finding fractions of amounts 5:8 - Mixed revision sheets on all of the above 1:16, 1:17 - Fractions questions in context 	<ul style="list-style-type: none"> - Add and subtract fractions by finding a common denominator 5:9, 1:16 - Multiply fractions (including mixed numbers) 5:10 - Divide fractions (including mixed numbers) 5:10, 1:17 Q3 - Finding fractions of amounts 5:8 - Mixed revision sheets on all of the above 1:16, 1:17 - Fractions questions in context
<p>Types of number</p> <ul style="list-style-type: none"> - Squaring and cubing a number (linking back to number work studied in first half term) Consider revising finding the area of squares to aid with this. - Square numbers up to 15 x 15. - Square rooting a number 1:4 - Defining factors and multiples and primes 1:2, 1:5 - Writing a number as the product of its prime factors. You may want to use a timestables square to support 	<p>Types of number</p> <ul style="list-style-type: none"> - Squaring, square rooting and cubing a number. Know square numbers up to 15 x 15. - Defining factors and multiples and primes 1:2, 1:5 - Writing a number as the product of its prime factors 1:5 Q7-9 - HCF and LCM 1:3 - Worded LCM questions (e.g. buns come in packs of 12 and burgers come in packs of 3. How many packets until you have the same amount.) 	<p>Types of number</p> <ul style="list-style-type: none"> - Squaring, square rooting and cubing a number. Know square numbers up to 15 x 15. - Defining factor, multiples and primes 1:2, 1:5, 1:12 - Writing a number as the product of its prime factors 1:5 Q7-9 - HCF and LCM 1:3, 1:13, - Worded LCM questions - Simple negative powers and deep understanding of basic index laws 1:35, 1:37, 7:1, 7:2
<p>One week for revision DC3 - End of term test focussing on everything from Christmas but could contain anything from this year</p>		
<p>Easter Holidays</p>		
<p>Ratio Prior Learning in Year 6:</p> <ul style="list-style-type: none"> • Solve problems using the relative size of two quantities • Solve problems involving similar shapes where the scale factor is known or can be found 		

<ul style="list-style-type: none"> Solve problems using unequal sharing using knowledge of fractions <p>Linear Graphs Prior Learning: They should be able to plot points in all four quadrants.</p>		
<p>Ratio and proportion</p> <ul style="list-style-type: none"> Understand ratio 5:24 Simplify ratio 5:24 Divide numbers into ratios using the Singapore bar method 5:25, 5:26 	<p>Ratio and proportion</p> <ul style="list-style-type: none"> Understand ratio 5:24 Simplify ratio 5:24 Divide numbers into ratios using the Singapore bar method 5:25, 5:26 	<p>Ratio and proportion</p> <ul style="list-style-type: none"> Understand ratio 5:24 Simplify ratio 5:24 Divide numbers into ratios using the Singapore bar method 5:25, 5:26, 1:21, 1:22
<p>Substitution</p> <ul style="list-style-type: none"> Substituting into a very simple expression 2:16, , 2:17, Substituting into a simple expression with decimals and negative (hence using number work studied earlier in the year) 2:18, 2:19, 2:20, 2:21. 	<p>Substitution</p> <ul style="list-style-type: none"> Substituting into an expression 2:16, 2:17 Substituting into an expression with decimals, fractions and negatives (hence using number work studied earlier in the year) 2:18, 2:19, 2:20, 2:21. 2:20, Substituting into an equation and then solving (hence using algebra work studied earlier in the year) 	<p>Substitution</p> <ul style="list-style-type: none"> Substituting into an expression 2:16, Substituting into an expression with decimals, fractions and negatives (hence using number work studied earlier in the year) 2:18, 2:19, 2:20, 2:21. 2:19, 2:20, 2:21, 2:22, 2:23 Substituting into an equation and then solving (hence using algebra work studied earlier in the year)* Drawing linear graphs 6:11
<p>1 week of revision to allow pupils to take material home over half term</p>		
<p>Half Term</p>		
<p>2 weeks of continuous revision and then End of Year Test covering all topics taught this year</p>		
<p>Recapping of problematic topics from the test</p>		
<p>Probability</p> <ul style="list-style-type: none"> Understanding the language of probability (e.g. fairness, 50/50, certain, impossible, theoretical probability etc) Understand that all probabilities sum to 1 <p>Pre-teaching topics from the year 8 scheme of work that it would be nice to have more time for and investigate fully. Suggested topics</p>	<p>Probability</p> <ul style="list-style-type: none"> Understanding the language of probability (e.g. fairness, 50/50, certain, impossible, theoretical probability etc) Understand that all probabilities sum to 1 <ul style="list-style-type: none"> Be able to estimate the probability of something happening using the theoretical probability Create sample spaces and use these to 	<p>Probability</p> <ul style="list-style-type: none"> Understanding the language of probability (e.g. fairness, 50/50, certain, impossible, theoretical probability etc) Understand that all probabilities sum to 1 <ul style="list-style-type: none"> Be able to estimate the probability of something happening using the theoretical probability Create sample spaces and use these to

<p>include:</p> <ul style="list-style-type: none">- Expanding single brackets- Volume of cuboids- Simple linear graphs	<p>calculate probabilities</p> <p>Pre-teaching topics from the year 8 scheme of work that it would be nice to have more time for and investigate fully. Suggested topics include:</p> <ul style="list-style-type: none">-Circles (they should have learnt diameter, radius etc from primary)-Linear graphs-Pythagoras to find the hypotenuse	<p>calculate probabilities</p> <p>Pre-teaching topics from the year 8 scheme of work that it would be nice to have more time for and investigate fully. Suggested topics include:</p> <ul style="list-style-type: none">-Simultaneous Equations-Pythagoras
<p>END OF ACADEMIC YEAR</p>		